SONY

UHF SYNTHESIZED TRANSMITTER

WRT-822B

SERVICE MANUAL

1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Table of Contents

1. Operating Instructions 1-1

2. Service Overview

2-1. Disassembly 2-1
2-2. Notes on Parts Replacement 2-2
2-2-1. EEPROM (IC405) Replacement 2-2
2-3. Error Messages 2-2

3. Electrical Alignment

3-1. Equipment and Tools 3-1
3-2. Adjustments 3-2
3-2-1. Power Supply Voltage Check 3-3
3-2-2. Carrier Frequency Adjustment 3-4
3-2-3. RF Power Output Adjustment 3-5
3-2-4. Reference Frequency Deviation Adjustment 3-5
3-2-5. Maximum Frequency Deviation Adjustment 3-6
3-2-6. Distortion Ratio Check 3-7
3-2-7. S/N Check 3-8
3-2-8. Frequency Characteristics Check 3-9
3-2-9. Tone Signal Adjustment 3-10
3-2-10. Battery Alarm Signal Check 3-11
3-2-11. Spurious Emissions Check 3-13

4. Spare Parts

4-1. Notes on Repair Parts 4-1
4-2. Exploded Views 4-2
4-3. Electrical Parts List 4-3
4-4. Supplied Accessories 4-7

5. Semiconductor Pin Assignments 5-1

6. Block Diagram 6-1

7. Board Layout

MB-940 7-1

8. Schematic Diagrams

MB-940 8-1

Section 1
Operating Instructions

Reprinted from the operating instructions

SONY

3-205-431-**11** (1)

UHF Synthesized Transmitter

Operating Instructions

WRT-822B

Sony Corporation © 2001 Printed in Japan

Owner's Record

The model and serial numbers are located at the rear of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. WRT-822B Serial No._____

Notice for customers in the U.S.A.

Use of Sony wireless devices is regulated by the Federal Communications Commission as described in Part 74 subpart H of the FCC regulations and users authorized thereby are required to obtain an appropriate license.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Notice for customers in Canada

Use of Sony wireless devices is regulated by the Industry Canada as described in their Radio Standard Specification RSS-123.
A licence is normally required. The local district office of Industry Canada should therefore be contacted. When the operation of the device is within the broadcast band, the licence is issued on no-interference, no-protection basis with respect to broadcast signals.

Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Notice for customers in Europe

CE 0889 ⓘ

U.K.	854.125 - 862 MHz
Turkey	854.125 - 862 MHz
Spain	841.250, 841.750, 842.250, 842.750 MHz 843.250, 848.750, 849.250, 849.750 MHz 850.250, 850.750, 851.250, 851.750 MHz
Germany	798 - 822 MHz
Norway	800 - 820 MHz
Luxembourg	800 - 830 MHz, 854.125 - 862 MHz
Belgium	854.125 - 862 MHz
Denmark	800 - 820 MHz
France	470 - 830 MHz
Greece	800 - 820 MHz
Ireland	800 - 820 MHz
Italy	800 - 820 MHz
Portugal	800 - 820 MHz
Sweden	800 - 820 MHz
Switzerland	800 - 820 MHz
Finland	800 - 814 MHz
Iceland	800 - 814 MHz
Austria	774 - 790 MHz
Netherlands	774 - 782 MHz

Hereby, Sony Corporation, declares that this WRT-822B is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Note:

In some countries additional frequency bands may be used with the agreement of the national authority.

Note for customers in Austria:
Before use, it is necessary to obtain individual permission of the local telecommunications spectrum authority.

Note for customers in Switzerland:
Before use, a request of concession for a wireless microphone (Frequency Class 3) has to be submitted to Bakom.

Note for customers in Finland:
To own and use, it is necessary to obtain an individual licence of the Telecommunications Administration Center.

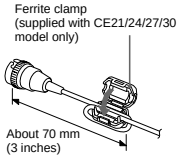
Note for customers in Luxembourg:
Before any use of an equipment, the frequencies required have to be, if necessary according to the regulations in force, assigned prior to usage by the "ILT".

Note for customers in Italy:
The use of this product within Italy is subject to article 334 of the Postal and Telecommunications regulations.

Nota per i clienti in Italia:
L'uso del prodotto sul territorio italiano è soggetto alle regolamentazioni del Codice Postale e delle Telecomunicazioni art. 334.

Note on the model available in Europe

When you operate the WRT-822B on the bandwidth between 470 MHz and 566 MHz, be sure to fix a **Ferrite Clamp** to the microphone cable, near the microphone connector as shown below.



Wind the cable once around the clamp.

Overview

The WRT-822B is a transmitter for a UHF synthesized wireless microphone system to be used for broadcast or movie production purpose. This transmitter is suitable for Electronic News gathering (ENG) and Electronic Field Production (EFP).

The microphone/transmitter and tuner of the wireless microphone system are classified by frequency band.

A 24-MHz frequency band is assigned to each microphone/transmitter and tuner model. In building a UHF wireless microphone system, be sure to combine a microphone/transmitter and a tuner having the same wireless channel (frequency).

Features

The features of the WRT-822B are:
- Phase Locked Loop (PLL) synthesized system
- Compact and lightweight
- Remote battery alarm on tuner
- Operation powered by easily available batteries
- LCD for coordinated operation control
- Saved channel and input attenuation settings
- Highly reliable electronic attenuator
- Compatibility with Sony lavalier microphone
- RF carrier with tone signal
- Wide dynamic range and low noise

Precautions

- The unit is designed for use in ambient temperature range of 0°C to 50°C (32°F to 122°F).
- Do not place the unit on or near heat sources, such as lighting equipment, power amplifiers, or in a place subject to direct sunlight or excessive moisture. In such places, the external finish or internal parts of the unit may be damaged.
- If the unit is used in a very humid or dusty place or in a place subject to expose to an active or corrasive gas, clean its surface as well as the connectors with a dry, soft cloth soon after use.
  Lengthy use of the unit in such places or not cleaning it after its use in such places may shorten its life.
- When cleaning the unit, never use organic solvents such as thinners or benzine, which will damage the finish of the unit.
- The unit has been factory adjusted precisely. Do not tamper with its internal parts or attempt to repair it.

Specifications

Transmitter and modulator section

Oscillator	Crystal controlled PLL synthesizer
Type of emission	F3E
Carrier frequencies	Model available in USA: 470 to 608 MHz 614 to 806 MHz Model available in Europe: 470 to 606 MHz 614 to 862 MHz
Operating frequency band	24 MHz *Refer to the "Sony Wireless Microphone System Frequency List" supplied with this manual.*
RF power output	20 mW (50-ohm load)
Frequency stability	Within ±15 kHz
Tone signal	32.768 kHz
Battery condition signal	32.782 kHz
Type of antenna	$^{1}/_{4}$-wavelength wire
Pre-emphasis	50 µs
Deviation	±5 kHz (–60 dBv, 1 kHz input)
Frequency response	70 to 15,000 Hz
Signal-to-noise ratio	60 dB or more (A-weighted, modulation frequency 1 kHz, with ±5 kHz deviation at WRR-802)
Audio attenuator	0 to 21 dB, variable in 3-dB steps
Input level	–60 dBv at audio attenuator 0 dB
Maximum input level	–3 dBv at audio atteuator 21 dB

0 dBv = 1 Vrms

Power section

Power requirements	3.0 V DC (two LR6/size AA alkaline batteries)
Battery life	Approx. 6 hours at 25°C (77°F) with Sony LR6 alkaline batteries

General

Operating temperature	0°C to +50°C (32°F to 122°F)
Storage temperature	–30°C to +60°C (–22°F to +140°F)
Dimensions	63 × 103 × 17 mm (w/h/d) ($2^{1}/_{2} \times 4^{1}/_{8} \times {}^{11}/_{16}$ inches)
Mass	Approx. 145 g (5.1 oz) including batteries

Supplied accessories

Operating Instructions
  Model available in USA (3)
  Model available in Europe (4)
Sony wireless Microphone System Frequency List (1)
Soft case (1)
Ferrite clamp (supplied with CE21/24/27/30 model only) (1)

Optional accessories

Lavalier microphones
  ECM-44BC, ECM-55BC, ECM-66BC, ECM-77BC, ECM-166BC, ECM-310BC, ECM-350BC
Microphone cable
  EC-1.5CF

Design and specifications are subject to change without notice.

Error Messages

When a problem occurs, one of the following error message may appear on the display.

Messages	Contents	Measures
ERROR 11	An error occurred in backup memory data.	Contact your Sony dealer.
ERROR 21	The PLL synthesized circuit is in trouble.	
ERROR 31	The battery voltage exceeds the allowable value.	Use the specified batteries.

Notes on Microphone System Operation

- To operate with two or more channels, maintain a distance of at least 30 cm (one ft.) between each pair of transmitters.
  For details of operation with two or more channels, refer to the Operating Instructions for the WRR-802/805/855/862, etc.
- Ensure that the tuners set to channels not being used are either turned off or set to the minimum output level.
- When powering the transmitter on or off, to keep the noise to a minimum, set the audio output level from the tuner or mixer to a minimum.
- Powering the transmitter on without checking the channel selection first may interfere with the operation of other microphones/transmitters, if the current setting is already being used.
- To prevent noise generation, keep the microphones and transmitters at least 3 m (10 feet) away from the antennas when the system is operated using a group which allows selection of up to 11 channels, and at least 6 m (20 feet) away when using a group which allows selection of 12 channels.
- When there is a strong interference signal around the microphone system, such as an interference caused by an active handyphone, noise may occur on the microphone system.

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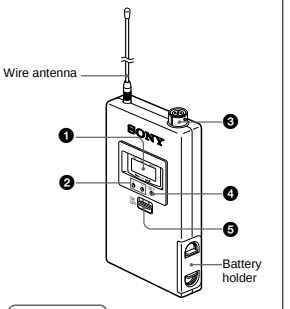
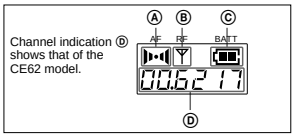
Parts Identification



❶ LCD (liquid-crystal display) display

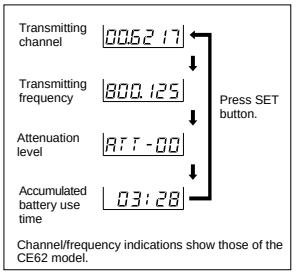


Ⓐ AF (audio input) indication
Lights whenever an audio signal stronger than the reference level is received.

Ⓑ RF (antenna output) indication
Lights during signal transmission from the antenna.

Ⓒ BATT (battery) indication
Shows the battery condition.
See "Battery indication" in "Power Supply" section.

Ⓓ CH (channel) indication
Shows transmitting channel.
Each time you press the SET button in Transmitting mode, the channel indication changes as follows.



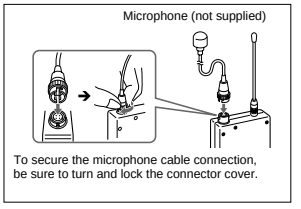
Transmitting channel: The current transmitting channel setting.
Transmitting frequency: The current transmitting fequency setting.
Attenuation level: The input attenuation level setting in dB. Can be set within a range of 0 to 21 dB in 3-dB steps.
Accumulated battery use time: The accumulated time of battery use (in one-minute increments).

❷ + (+ selection) / – (– selection/reset) buttons

In setting mode, select the transmission channel, frequency and attenuator level using either of these buttons, or reset the time-of-use indication to "00:00" with the – button.

❸ Audio input connector

Connect the output connector of the following Sony lavalier microphones: ECM-44BC, ECM-55BC, ECM-66BC, ECM-77BC, ECM-166BC, ECM-310BC, ECM-350BC.
You can also use your wired microphone by connecting it to this connector with an optional EC-1.5CF microphone cable.



Caution
When connecting a microphone to the unit, be sure to turn the unit off.

❹ SET button

In Transmitting mode, press this button to change the indicated items in the lower half of the LCD disaply. To change the settings on each item, set the transmitter in Setting mode as follows; turn the POWER switch to ON while holding the SET button down. Then press the SET button to select the itmes to be changed, and press the +/– buttons to change the settings.

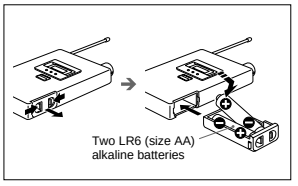
❺ POWER switch

Turns the transmitter ON or OFF.
When you set this switch to ON without holding down any other button, the transmitter enters Transmitting mode, and transmits the signal of the selected channel.

Note
Be sure to connect a microphone before turning the power ON.

Power Supply

The transmitter can operate on two LR6 (size AA) alkaline batteries continuously for about 6 hours at 25°C (77°F).



Installing the batteries

1 Slide the battery-holder catches inward (in the direction of the arrows ➡ ⬅) to take out the battery holder.
2 Match the polarities and insert the batteries.
3 Set the battery holder in the original position.

Battery indication

When you turn the power on, the battery status appears in the BATT indication on the display section as shown on the right column.

	1	2	3	4
BATT indication	Lights	Lights	Flashes	Goes off
Battery condition	Good	Less than half-charge	Almost exhausted	Completely exhausted

When the batteries reach stage **3** shown in the table, the BATT indication on the WRR-802/805/862 and WRU-806 also starts flashing.

Note
The indication may be incorrect if the batteries are not new when installed. If you plan to use the transmitter for a long period, it is best to replace the batteries with new ones.

Notes on batteries

- Use new alkaline batteries.
- Do not pair different types of battery.
- Always replace the two batteries together.
- The batteries are not rechargeable.
- Be careful to install the batteries with the correct polarity.
- When not using the transmitter for a long period, remove the batteries to avoid leakage. If the batteries do leak, clean all leakage from the battery holder case and the unit. Leakage left in the holder case and the unit may cause poor battery contact. If there seems to be poor battery contact, consult your Sony dealer.

Settings

For the transmitting channels and frequencies selectable on your transmitter, see the *"Sony Wireless Microphone System Frequency List"* supplied with this manual.

[redacted]

In Setting mode, you can change the transmission channel/frequency and the attenuation level, or reset the accumulated time indication.

To enter Setting mode

While holding down the SET button, set the POWER switch to ON.
The transmitter enters Setting mode and the indication before the transmitter was previously turned OFF flashes on the display section.

Each time you press the SET button, the setting items are cyclically switched as shown on the " Ⓓ CH (channel) indication" of the "Parts Identification" (see the left most column).

[redacted]

The transmitting channel can be selected through either the channel number or the frequency.

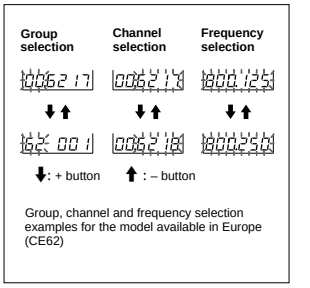
1 Set the transmitter to Setting mode.
If the channel number (or frequency) indication does not appear, press the SET button until the channel number (or frequency) indication appears.

2 Press the + or – button to select the channel number (or frequency).

Pressing the + button cycles the indication in the order shown in the tables in the *"Sony Wireless Microphone System Frequency List"* supplied with the manual. Pressing the – button cycles the indications in the opposite direction.

Hold down the button to change the channel number (or frequency) quickly.

Note on the model available in Europe
On the model available in Europe, the transmitting channels are grouped in four sets.
Select the group number before selecting the channel number as follows.
1) When the left two digits flash, select the group number by pressing the + or – button.
2) When the desired group number appears, press the SET button.
The right four digits start to flash for channel number selection.
3) Select the channel number by pressing the + or – button.
4) When the desired channel number appears, press the SET button.


Group selection
Channel selection
Frequency selection
: + button
: – button
Group, channel and frequency selection examples for the model available in Europe (CE62)

3 When the desired channel number (or frequency) appears, set the POWER switch to off position to release Setting mode, or press the SET button to continue operations in Setting mode.

The next time you turn on the transmitter (by setting the POWER switch to ON), the transmitter will enter Transmitting mode with the selected channel number (or frequency).

Notes
- The transmitter cannot transmit in Setting mode.
- Make sure that the channel selected on the transmitter is the same as that selected on the tuner being used in the same system.
- Depending on the noise or interference conditions, all selectable channels may not be usable. If necessary, you can determine which channels are usable by cycling the channel selection through a number of channels on the tuner with the unit set to OFF. Those channels for which the RF indicator on the tuner does not light are usable.
- If there is a TV broadcasting station near by, do not use the station's channel.
- The transmitter may not operate correctly if it is turned on immediately after being turned off in Setting mode. Wait for a few seconds before turning the power on again.
- The channel numbers and frequencies of your transmitter are shown on the *"Sony Wireless Microphone System Frequency List"* supplied with the manual.

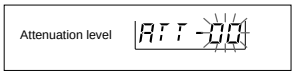
[redacted]

You can change the input attenuation setting in 3-dB steps in a range of 0 to 21 dB. You can change it either in Setting mode or in Transmitting mode.

Changing in Setting mode

1 Set the unit in Setting mode.

2 Press the SET button until the attenuation level indication appears on the display.



3 Press the + or – button to select the attenuation level.

If you keep either button pressed, the level will be incremented or decremented successively.

4 Once the desired level appears, set the POWER switch to OFF to release Setting mode.
Or, press the SET button to continue operations in Setting mode.

The next time you turn on the power only by setting the POWER switch to ON, the transmitter will be set to Transmitting mode with the selected attenuation setting.

Changing in Transmitting mode

You can also change the input attenuation level during transmission.

1 If the attenuation level is not displayed, press the SET button until the attenuation level indication appears on the display.

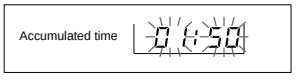
2 Press the + or – button to select the level.

[redacted]

The time indication accumulates time in hours and minutes when the WRT-822B is on.
Reset the indication to "00:00" whenever you replace the batteries so that it can display the running time of the batteries.

1 Set the unit in Setting mode.

2 Press the SET button until the accumulated time indication appears on the display.



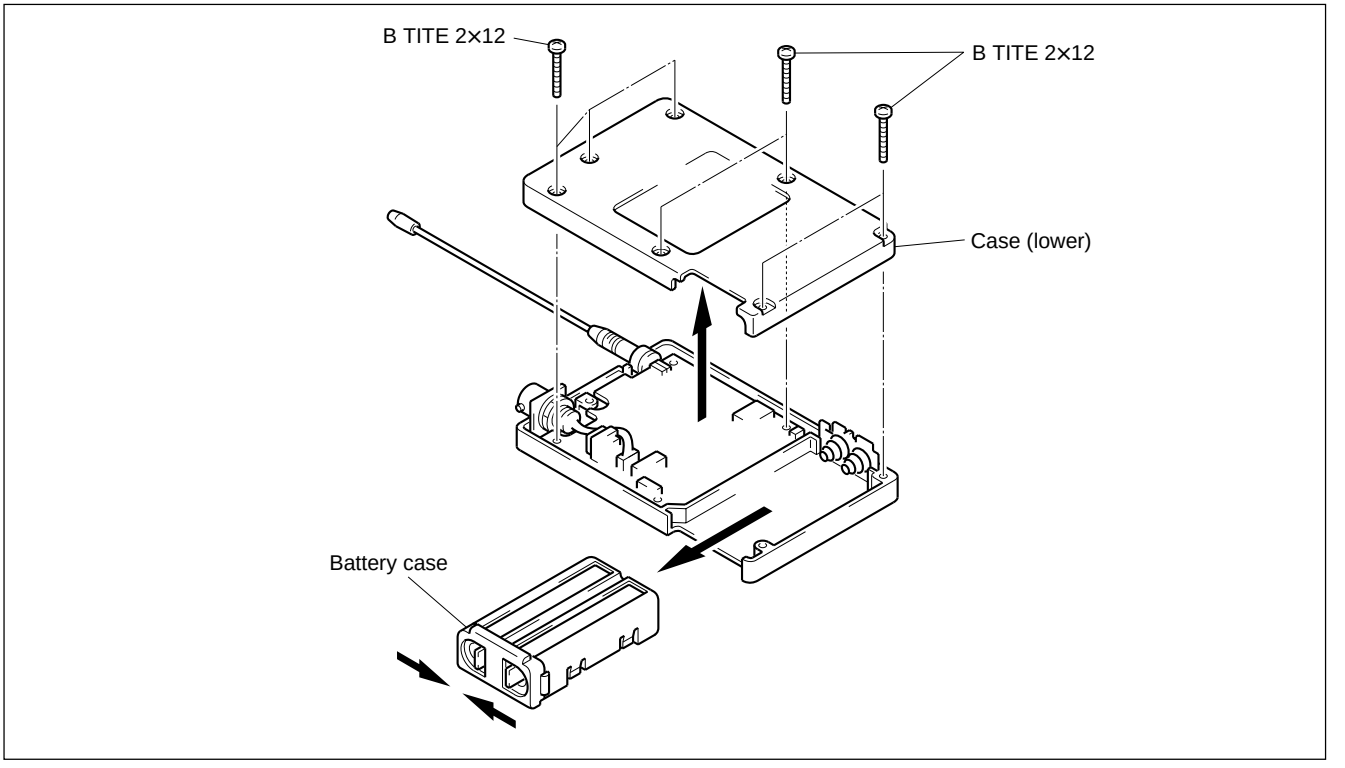
3 Press the – button.
The time indication resets to "00:00."
While you see "00:00" indication, you can go back to previous value by pressing the + button.

4 Set the POWER switch to OFF to release Setting mode.
Or, press the SET button to continue operations in Setting mode.

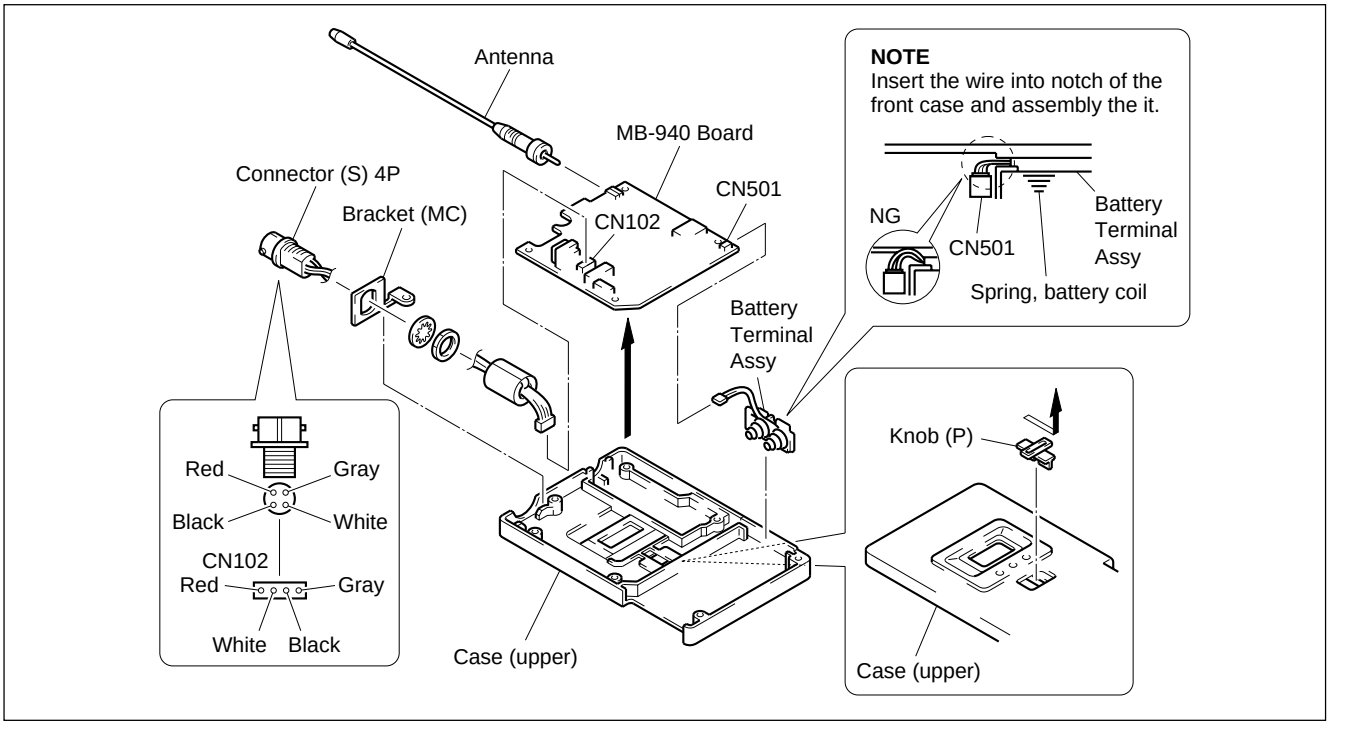
Section 2
Service Overview

2-1. Disassembly

Case (lower) /Battery case



Audio Connector/MB-940 Board/Case (Upper)



2-2. Notes on Parts Replacement

2-2-1. EEPROM (IC405) Replacement

On the EEPROM (IC405) mounted on the MB-940 board, frequency data corresponding to each WRT-822B have been written. After replacing an EEPROM, it is necessary to write the corresponding frequency data to the new EEPROM.

2-3. Error Messages

When a problem occurs, one of the following error messages may appear on the display.

Messages	Contents	Measures
Error 11	An error occurred in backup memory data.	It is necessary to write the corresponding frequency data to the EEPROM.
Error 21	The PLL synthesized circuit is in trouble.	Check the PLL synthesized circuit (IC300, CP300, and its peripheral circuit) on MB-940 board.
Error 31	The battery voltage exceeds the allowable value.	Use the specified batteries.

Section 3
Electrical Alignment

3-1. Equipment and Tools

Equipment Required

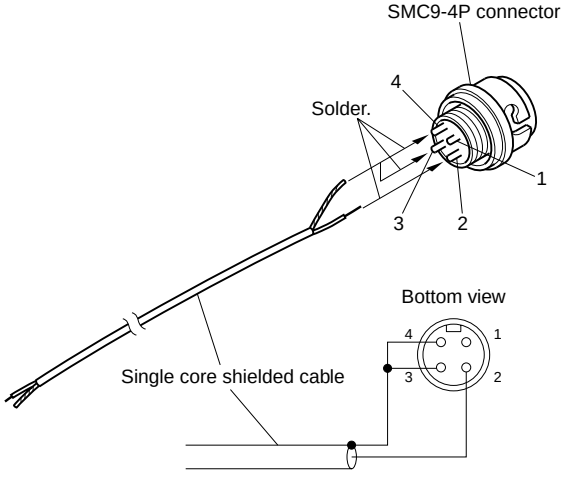
Name	Specifications	Model Name
DC Power Supply	Output regulated voltage: 0 to 5 V, 2 A	–
DC Ammeter	Measurement range: 300 mA	–
Spectrum Analyzer	Frequency: 10 kHz to 10 GHz	ADVANTEST R3371B or equivalent
Modulation Analyze	RF input Frequency: 150 kHz to 3 GHz	ANRITSU MS616A or equivalent
RF Power Meter with Power sensor	Range: 3 µW to 100 mW	HEWLETT PACKARD 435B (with Power sensor HEWLETT PACKARD 8482A) or equivalent
Audio Analyzer	Oscillator: 20 Hz to 100 kHz Distortion meter S/N meter Level meter	HEWLETT PACKARD 8903B (with A-weight filter) or equivalent
Frequency Counter	Frequency: 10 Hz to 1000 MHz Effective digits: 10 digits Resolution: 0.1 Hz	HEWLETT PACKARD 5385A or equivalent
Oscilloscope	Frequency: DC to 10 MHz	–
Digital Volt Meter	Effective digits: $3^1/_2$ digits	–

Tools Required

Name	Part No.	Remarks
MM-SMA (J) connector	J-6402-480-A	For RF signal input
SMA-BNC (J) connector	J-6402-490-A	For RF signal input
Mic input cable	–	Refer to “How to make a Mic input cable”.
Adjustor (0.4 x 1.3 mm)	7-721-052-81	

How to make a Mic input cable

Required parts
SMC9-4P connector: 1 (Part No. 1-560-155-00)
Single-core shielded cable



3-2. Adjustments

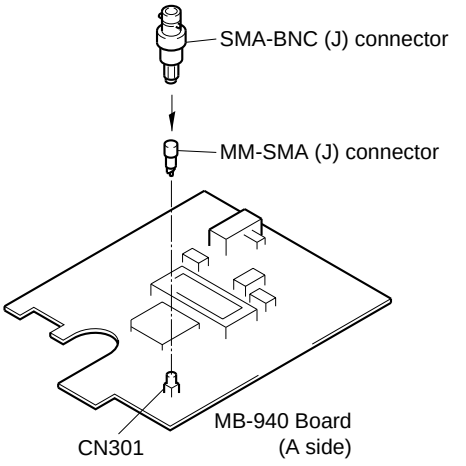
This section describes the following adjustments and checks required to satisfy specifications.

Adjustment and Check Items

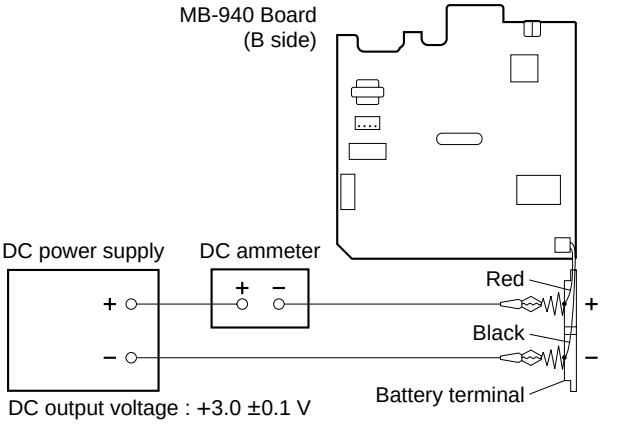
3-2-1. Power Supply Voltage Check
3-2-2. Carrier Frequency Adjustment
3-2-3. RF Power Output Adjustment
3-2-4. Reference Frequency Deviation Adjustment
3-2-5. Maximum Frequency Deviation Adjustment
3-2-6. Distortion Ratio Check
3-2-7. S/N Check
3-2-8. Frequency Characteristics Check
3-2-9. Tone Signal Adjustment
3-2-10. Battery Alarm Signal Check
3-2-11. Spurious Emissions Check

Preparation

1. When adjustments are performed, remove the MB-940 board (with battery terminal and Mic input connector) from WRT-822B unit.
   Refer to the "Section 2. Service Overview" for removal.
2. Connect the MM-SMA (J) connector (J-6402-480-A) with SMA-BNC (J) connector (J-6402-490-A) to the antenna connector (CN301) on the MB-940 board as shown below.



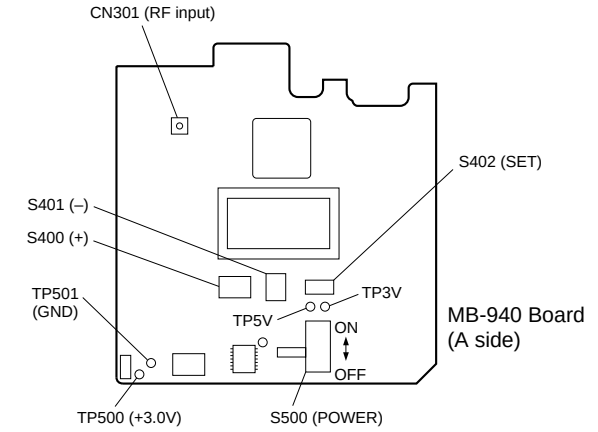
3. Connecting the DC power supply.
   Supply the DC power to the battery terminal springs as shown below.

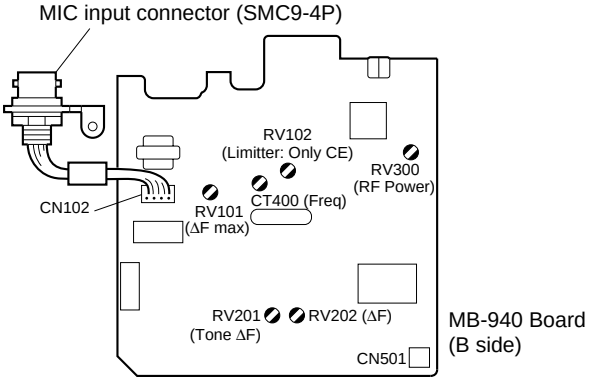


Check

After the DC power supply connection is completed, set the power switch (S500) to ON, and check the level on DC ammeter.
DC ammeter indication level: 140 to 180 mA

Adjustment Location





3-2-1. Power Supply Voltage Check

Equipment and Tools Required

DC power supply
  DC output voltage: +3.0 ±0.1 V dc
DC ammeter
DC volt meter (or Digital multimeter)
Adjuster (Sony Part No. 7-721-052-81)

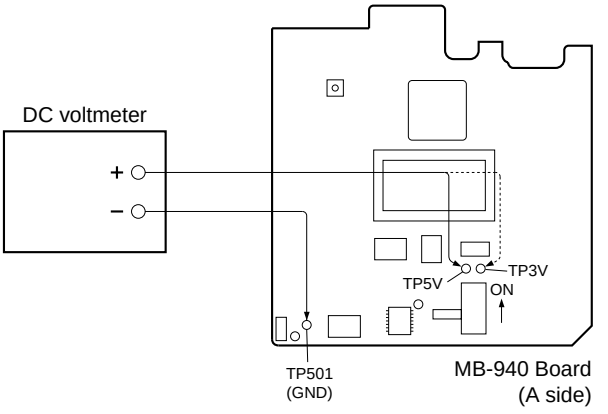
Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).
Transmitting Channel setting: "Don't Care"
Attenuation setting: "Don't Care"
Accumulated time setting: "Don't Care"

Procedure

(1) Set the POWER switch (S500) on the MB-940 board to ON.
(2) Check the DC Voltage of the TP5V terminal to the specified voltage as below:
  Specification: DC Voltage at TP5V terminal
  = +5.0 ±0.1 V dc (For Vcc1)

(3) Check the DC voltage of the TP3V terminal to the specified voltage as below:
  Specification: DC voltage at TP3V terminal
  = +3.3 ±0.1 V dc (For Vcc2)



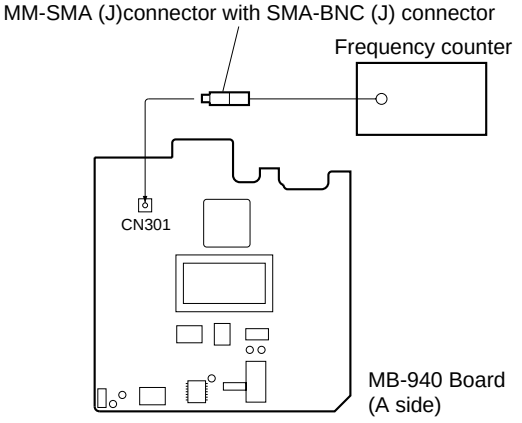
3-2-2. Carrier Frequency Adjustment

Equipment and Tools

DC power supply
  DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Frequency counter
Adjustor (Sony Part No. 7-721-052-81)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
  CE21 model; Group 00, 22-32 channel (482.000 MHz)
  CE33 model; Group 00, 34-32 channel (578.000 MHz)
  CE62 model; Group 00, 63-32 channel (810.000 MHz)
  CE67 model; Group 00, 68-32 channel (850.000 MHz)
  U14 model; 16-01 channel (482.125 MHz)
  U30 model; 32-01 channel (578.125 MHz)
  U62 model; 64-01 channel (770.125 MHz)
  U66 model; 68-01 channel (794.125 MHz)
Attenuation setting: "Don't Care"
Accumulated time setting: "Don't Care"

Procedure

(1) Connect the frequency counter to the antenna connector (CN301) with MM-SMA (J) and SMA-BNC (J) connectors.
(2) Adjust ⊘CT400 so that the frequency counter reading meets the following specification.
  Specification: Carrier frequency mentioned in the table below.

WRT-822B	Carrier frequency
CE21 model	482.000 MHz ±1 kHz
CE33 model	578.000 MHz ±1 kHz
CE62 model	810.000 MHz ±1 kHz
CE67 model	850.000 MHz ±1 kHz
U14 model	482.125 MHz ±1 kHz
U30 model	578.125 MHz ±1 kHz
U62 model	770.125 MHz ±1 kHz
U66 model	794.125 MHz ±1 kHz

Adjustment: ⊘CT400/MB-940 Board (B side)

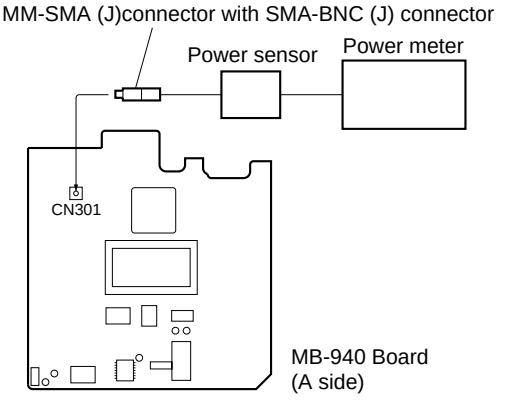
3-2-3. RF Power Output Adjustment

Equipment and Tools

DC power supply
  DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Power meter (with power sensor)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)
Adjustor (Sony Part No. 7-721-052-81)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
  CE21 model; Group 00, 22-32 channel (482.000 MHz)
  CE33 model; Group 00, 34-32 channel (578.000 MHz)
  CE62 model; Group 00, 63-32 channel (810.000 MHz)
  CE67 model; Group 00, 68-32 channel (850.000 MHz)
  U14 model; 16-01 channel (482.125 MHz)
  U30 model; 32-01 channel (578.125 MHz)
  U62 model; 64-01 channel (770.125 MHz)
  U66 model; 68-01 channel (794.125 MHz)
Attenuation setting: "Don't Care"
Accumulated time setting: "Don't Care"

Procedure

(1) Connect the power meter (with power sensor) to the antenna connector (CN301) with MM-SMA (J) and SMA-BNC (J) connectors.
(2) Adjust ⊘RV300 so that the power meter reading meets the following specification.
  Specification: Power meter = +20 ±2 mW
  Adjustment: ⊘RV300/MB-940 Board (B side)

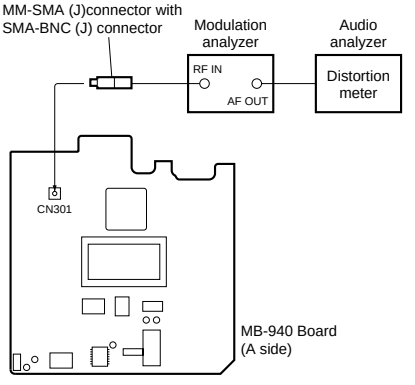
3-2-4. Reference Frequency Deviation Adjustment

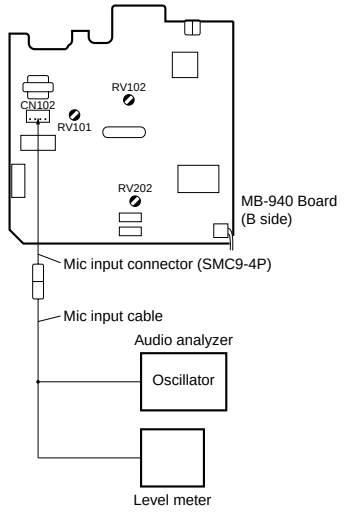
Equipment and Tools

DC power supply
  DC output voltage: +3.0 ±0.1 Vdc
DC ammeter
Audio analyzer
Modulation analyzer
  MEASUREMENT: FM
  MEASUREMENT RANGE: AUTO or ±10 kHz (manual operation)
  HPF: 50 Hz
  LPF: 20 kHz or 15 kHz
  DE EMPHASIS: 50 us
Adjustor (Sony Part No. 7-721-052-81)
Mic input cable (See page 3-1.)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)





Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
- CE21 model; Group 00, 22-32 channel (482.000 MHz)
- CE33 model; Group 00, 34-32 channel (578.000 MHz)
- CE62 model; Group 00, 63-32 channel (810.000 MHz)
- CE67 model; Group 00, 68-32 channel (850.000 MHz)
- U14 model; 16-01 channel (482.125 MHz)
- U30 model; 32-01 channel (578.125 MHz)
- U62 model; 64-01 channel (770.125 MHz)
- U66 model; 68-01 channel (794.125 MHz)

Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

Procedure

(1) Input 1 kHz, −60 dBV (−57.8 dBm) signal to the MIC input connector (SMC9-4P) with Mic input cable.

(2) Adjust ⊘RV102 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification: Frequency deviation = Maximum
Adjustment: ⊘RV102/MB-940 board (B side)

(3) Adjust ⊘RV101 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification: Frequency deviation = Maximum
Adjustment: ⊘RV101/MB-940 board (B side)

(4) Adjust ⊘RV202 so that the frequency deviation for the modulation analyzer reading meets the following specification.
Specification: Frequency deviation
= ±5 kHz ±0.1 kHz
Adjustment: ⊘RV202/MB-940 board(B side)

(5) After the adjustment has been completed, perform the "3-2-5. Maximum Frequency Deviation Adjustment".

3-2-5. Maximum Frequency Deviation Adjustment

Note

Be sure to perform this adjustment after "3-2-4. Reference Frequency Deviation Adjustment" has been completed.

Equipment and Tools

DC power supply
- DC output voltage: +3.0 ±0.1 V dc

DC ammeter
Audio analyzer
Modulation analyzer
- MEASUREMENT: FM
- MEASUREMENT RANGE: AUTO or ±100 kHz
- HPF: 50 Hz
- LPF: 15 kHz or 20 kHz
- DE EMPHASIS: 50 µs

Oscilloscope
Adjustor (Sony Part No. 7-721-052-81)
MIC input cable (See page 3-1.)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

Same as "3-2-4. Reference Frequency Division adjustments".

Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
- CE21 model; Group 00, 21-01 channel (470.125 MHz)
- CE33 model; Group 00, 33-01 channel (566.125 MHz)
- CE62 model; Group 00, 62-01 channel (798.125 MHz)
- CE67 model; Group 00, 67-01 channel (838.125 MHz)
- U14 model; 14-01 channel (470.125 MHz)
- U30 model; 30-01 channel (566.125 MHz)
- U62 model; 62-01 channel (758.125 MHz)
- U66 model; 66-01 channel (782.125 MHz)

Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

Procedure

For U14/U30/U62/U66 model

(1) Input 1 kHz, −24 dBV (−21.8 dBm) signal to the MIC input connector (CN102) with Mic input cable.

(2) Adjust ⊘RV101 so that the frequency deviation for the modulation analyzer reading meets the following specification.

Specification: Frequency deviation
= ±38 kHz$^{+1}_{-2}$ kHz

Adjustment: ⊘RV101/MB-940 board (B side)

For CE21/CE33/CE62/CE67 model

(1) Input 10 kHz, −24 dBV (−21.8 dBm) signal to the MIC input connector (SMC9-4P) with Mic input cable.

(2) Adjust ⊘RV102 so that the frequency deviation for the modulation analyzer reading meets the following specification.

Specification: Frequency deviation = Maximum

Adjustment: ⊘RV102/MB-940 board (B side)

(3) Input 1 kHz, −24 dBV (−21.8 dBm) signal to the MIC input connector (CN102) with Mic input cable.

(4) Adjust ⊘RV101 so that the frequency deviation for the modulation analyzer reading meets the following specification.

Specification: Frequency deviation
= ±26 kHz ±0.5 kHz

Adjustment: ⊘RV101/MB-940 board (B side)

(5) Adjust ⊘RV102 so that the frequency deviation for the modulation analyzer reading meets the following specification.

Specification: Frequency deviation
= ±24.5 kHz ±0.5 kHz

Adjustment: ⊘RV102/MB-940 board (B side)

3-2-6. Distortion Ratio Check

Equipment and Tools

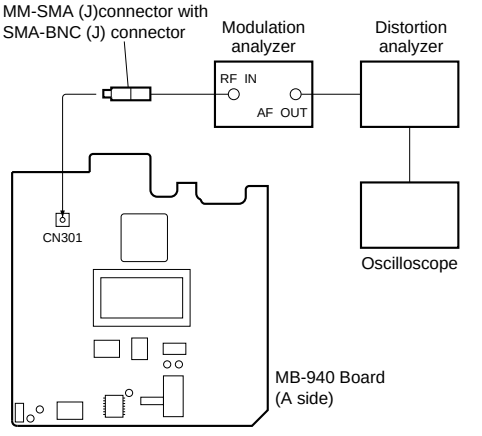
DC power supply
DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer

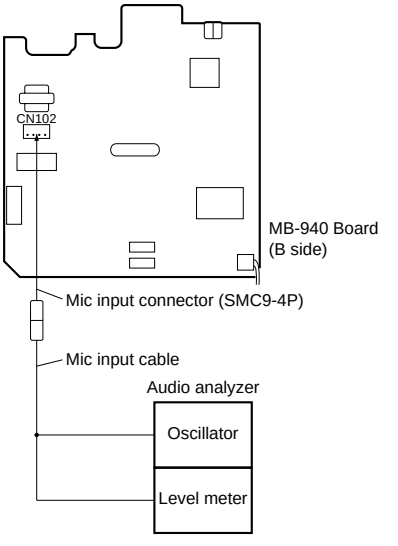
MEASUREMENT:	FM
MEASUREMENT RANGE:	AUTO or ±40 kHz
HPF:	50 Hz
LPF:	15 kHz or 20 kHz
DE EMPHASIS:	50 µs

Oscilloscope
MIC input cable (See page 3-1.)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

(For connecting the DC power supply, refer to the “preparations” on page 3-2.)





Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
- CE21 model; Group 00, 21-01 channel (470.125 MHz)
- CE33 model; Group 00, 33-01 channel (566.125 MHz)
- CE62 model; Group 00, 62-01 channel (798.125 MHz)
- CE67 model; Group 00, 67-01 channel (838.125 MHz)
- U14 model; 14-01 channel (470.125 MHz)
- U30 model; 30-01 channel (566.125 MHz)
- U62 model; 62-01 channel (758.125 MHz)
- U66 model; 66-01 channel (782.125 MHz)

Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

Procedure

(1) Connect the audio analyzer (distortion analyzer) to the AF OUT connector on the modulation analyzer.
(2) Set the audio analyzer to distortion measurement (distortion mode).
(3) Input 1 kHz, −60 dBV (−57.8 dBm) signal to the MIC input connector (SMC9-4P) with Mic input cable from audio analyzer (oscillator).
(4) Check that the distortion analyzer reading is **less than 0.90 %**.
(5) Input 1 kHz, −24 dBV (−21.8 dBm) signal to the MIC input connector (SMC9-4P) with Mic input cable.
(6) Check that the distortion analyzer reading is **less than 3 %**.

3-2-7. S/N Check

Equipment and Tools

DC power supply
DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer

MEASUREMENT:	FM
MEASUREMENT RANGE:	±40 kHz
HPF:	50 Hz
LPF:	15 kHz for HEWLETT PACKARD equipment 20 kHz for ANRITSU equipment
DE EMPHASIS:	50 μs

MIC input cable (See page 3-1.)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

Same as "3-2-6. Distortion Ratio Check".

Switch and Control Setting

The following setting is to be perform with the SET switch (S402), "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
- CE21 model; Group 00, 21-01 channel (470.125 MHz)
- CE33 model; Group 00, 33-01 channel (566.125 MHz)
- CE62 model; Group 00, 62-01 channel (798.125 MHz)
- CE67 model; Group 00, 67-01 channel (838.125 MHz)
- U14 model; 14-01 channel (470.125 MHz)
- U30 model; 30-01 channel (566.125 MHz)
- U62 model; 62-01 channel (758.125 MHz)
- U66 model; 66-01 channel (782.125 MHz)

Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

Procedure

(1) Connect the audio analyzer (level meter) to the AF OUT connector on the modulation analyzer.
(2) Input 1 kHz, −60 dBV (−57.8 dBm) signal to the MIC input connector (SMC9-4P) with Mic input cable from audio analyzer (oscillator).
(3) Set the audio analyzer to S/N measurement (with A-weighted filter).
(4) Check that the S/N reading is **more than 32 dB**. (with MIC input connector short-circuited).

3-2-8. Frequency Characteristics Check

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
  MEASUREMENT: FM
  MEASUREMENT RANGE: ±40 kHz
  HPF: 50 Hz
  LPF: 15 kHz or 20 kHz
  DE EMPHASIS: 50 μs
Oscilloscope
MIC input cable (See page 3-1.)
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

Same as "3-2-6. Distortion Ratio Check".

Switch and Control Setting

The following setting is to be perform with the SET switch (S402) , "+" switch (S400) and "−" switch(S401).

Transmitting Channel setting:
  CE21 model; Group 00, 21-01 channel (470.125 MHz)
  CE33 model; Group 00, 33-01 channel (566.125 MHz)
  CE62 model; Group 00, 62-01 channel (798.125 MHz)
  CE67 model; Group 00, 67-01 channel (838.125 MHz)
  U14 model; 14-01 channel (470.125 MHz)
  U30 model; 30-01 channel (566.125 MHz)
  U62 model; 62-01 channel (758.125 MHz)
  U66 model; 66-01 channel (782.125 MHz)
Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

Procedure

(1) Connect the audio analyzer (level meter) to the AF OUT connector for the modulation analyzer.
(2) Set the audio analyzer to level meter mode.
(3) Input 1 kHz, −60 dBV (−57.8 dBm) signal to the Mic input connector (SMC9-4P) with Mic input cable from audio analyzer (oscillator).
(4) Reads the indication on the audio analyzer (level meter) .
(5) Set the SENSITIVITY on the audio analyzer (level meter) so that the audio analyzer (level meter) reads 0 dB.
(6) Switch the oscillation frequency for the audio analyzer (oscillator) from 1 kHz to 100 Hz.
(7) Check that audio analyzer (level meter) reading is **0 ±1.0 dB**.
(8) Next, switch the oscillation frequency for the audio analyzer (oscillator) from 100 Hz to 10 kHz.
(9) Check that the reading for the audio analyzer (level meter) is **0.5 ±2.0 dB**.

3-2-9. Tone Signal Adjustment

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Frequency counter
Spectrum analyzer
Modulation analyzer
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Switch and Control Setting

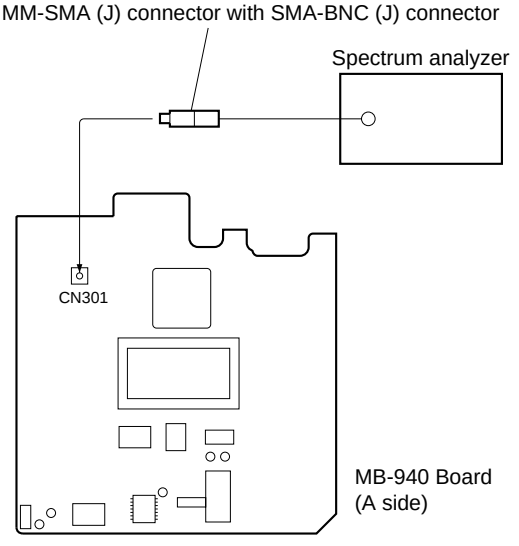
The following setting is to be perform with the SET switch (S402) , "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
  CE21 model; Group 00, 21-01 channel (470.125 MHz)
  CE33 model; Group 00, 33-01 channel (566.125 MHz)
  CE62 model; Group 00, 62-01 channel (798.125 MHz)
  CE67 model; Group 00, 67-01 channel (838.125 MHz)
  U14 model; 14-01 channel (470.125 MHz)
  U30 model; 30-01 channel (566.125 MHz)
  U62 model; 62-01 channel (758.125 MHz)
  U66 model; 66-01 channel (782.125 MHz)
Attenuation setting: 0 dB
Accumulated time setting: "Don't Care"

1. Frequency deviation adjustment

Connections

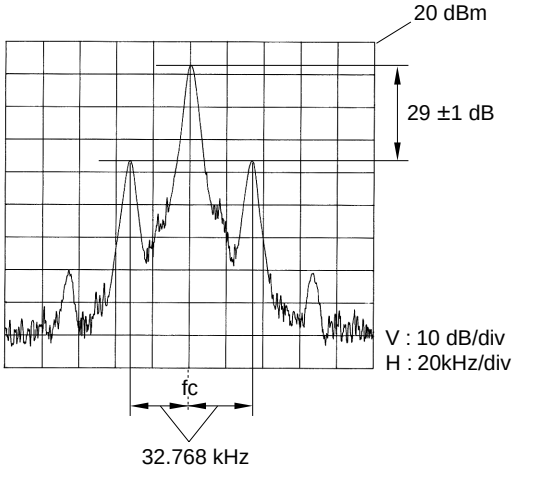
(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Procedure

(1) Set the spectrum analyzer as follows:
  CENTER FREQUENCY(fc):
    CE21 model; 470.125 MHz
    CE33 model; 566.125 MHz
    CE62 model; 798.125 MHz
    CE67 model; 838.125 MHz
    U14 model; 470.125 MHz
    U30 model; 566.125 MHz
    U62 model; 758.125 MHz
    U66 model; 782.125 MHz
  REFERENCE LEVEL: 20 dBm
  FREQUENCY SPAN: 200 kHz (20 kHz/DIV)
  RBW (resolution band width): 3 kHz
  VBW (video band width): 1 kHz
  ATT: 30 dB

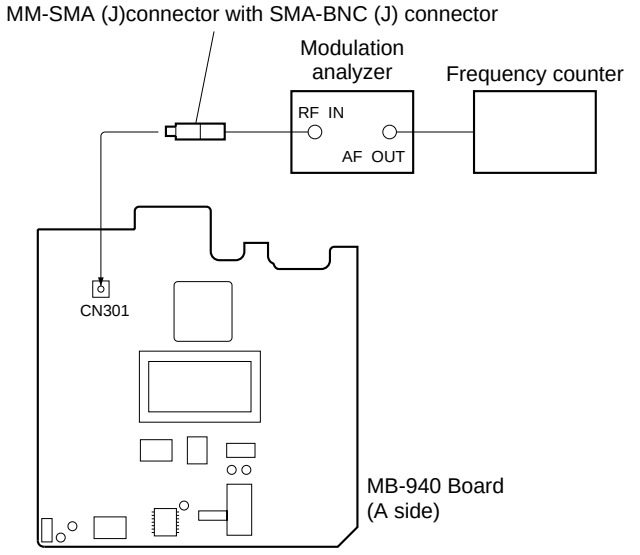
(2) Adjust ⊘RV201 so that level between carrier frequency (frequency center level) on spectrum analyzer and tone signal is within **29 dB ±1 dB**.



2. Frequency check

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-3.)



Procedure

Note

Perform the checking with the Mic input connector (SMC9-4P) short-circuit.

(1) Set the modulation analyzer as follows:
MEASUREMENT: FM
MEASUREMENT RANGE: ±40 kHz
HPF: 4 kHz
LPF: >20 kHz
DE EMPHASIS: OFF

(2) Check that the frequency counter (resolution : 0.1 Hz setting) reading is **32.768 kHz ±1 Hz**.

3-2-10. Battery Alarm Signal Check

Equipment and Tools

DC power supply
DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Frequency counter
Spectrum analyzer
Modulation analyzer
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Switch and Control Setting

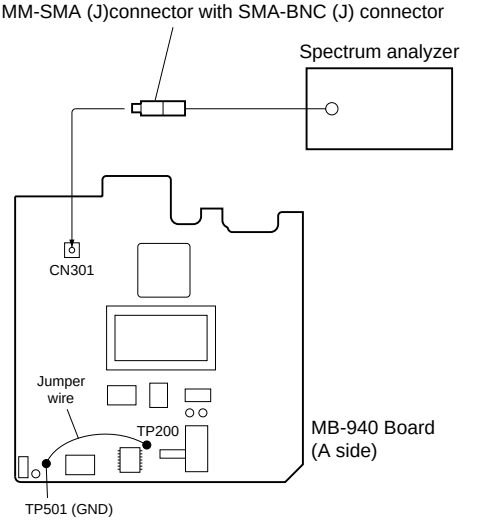
The following setting is to be perform with the SET switch (S402) , “+” switch (S400) and “−” switch(S401).

Transmitting Channel setting:
CE21 model; Group 00, 21-01 channel (470.125 MHz)
CE33 model; Group 00, 33-01 channel (566.125 MHz)
CE62 model; Group 00, 62-01 channel (798.125 MHz)
CE67 model; Group 00, 67-01 channel (838.125 MHz)
U14 model; 14-01 channel (470.125 MHz)
U30 model; 30-01 channel (566.125 MHz)
U62 model; 62-01 channel (758.125 MHz)
U66 model; 66-01 channel (782.125 MHz)
Attenuation setting: 0 dB
Accumulated time setting: “Don't Care”

1. Frequency deviation check

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-2.)



Connect a jumper wire between TP200 and TP501 (GND) by soldering. (TONE signal : OFF).

Procedure

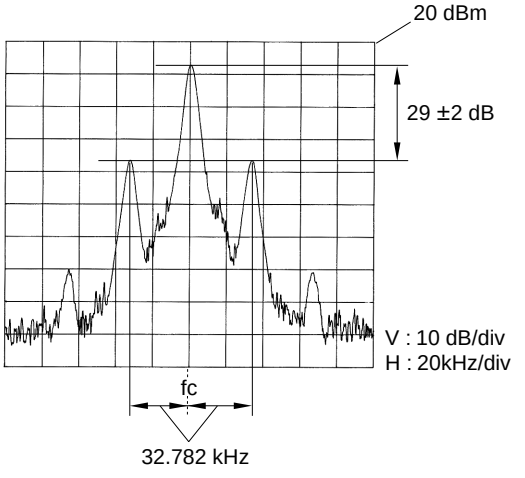
Note

Perform the checking with the MIC input connector short-circuited.

(1) Set the spectrum analyzer as follow:
CENTER FREQUENCY (fc):
CE21 model; 470.125 MHz
CE33 model; 566.125 MHz
CE62 model; 798.125 MHz
CE67 model; 838.125 MHz
U14 model; 470.125 MHz
U30 model; 566.125 MHz
U62 model; 758.125 MHz
U66 model; 782.125 MHz
REFERENCE LEVEL: 20 dBm
FREQUENCY SPAN: 200 kHz (20 kHz/DIV)
RBW (resolution band width): 3 kHz
VBW (video band width): 1 kHz
ATT: 30 dB

(2) Decrease gradually the DC output voltage of the DC regulated power supply and confirm that the battery alarm signal turns on at 2 ±0.2 V.

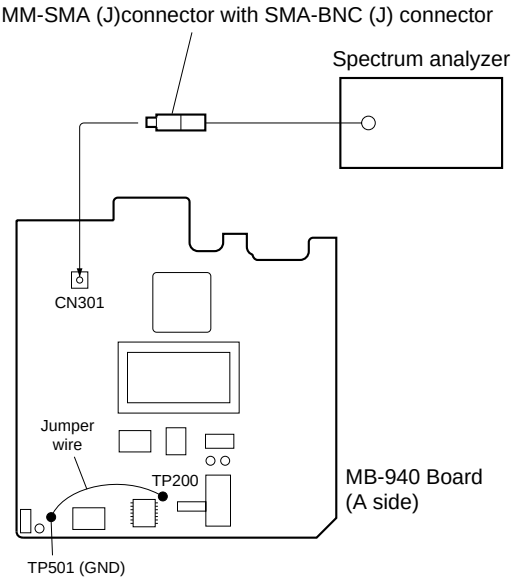
(3) Check that level difference between carrier frequency (center frequency level) on spectrum analyzer and tone signal is with in **29 ±2 dB.**



2. Frequency check

Connections

(For connecting the DC power supply, refer to the “Preparations” on page 3-2.)



Connect a jumper wire between TP200 and TP501 (GND) by soldering. (TONE signal : OFF).

Procedure

Note

Perform the checking with the Mic input connector (SMC9-4P) short-circuited.

(1) Set the modulation analyzer as follows:
MEASUREMENT: FM
MEASUREMENT RANGE: ±40 kHz
HPF: 4 kHz
LPF: >20 kHz
DE EMPHASIS: OFF

(2) Set the DC output voltage of DC power supply to 1 ±0.1 V so that battery alarm signal goes on.

(3) Check that frequency counter (resolution:0.1 Hz) reading is **32.782 kHz ±1 Hz**.

(4) After the checking, remove (unsolder) the jumper wire between TP200 and TP501 (GND) on the MB-940 board (A-side).

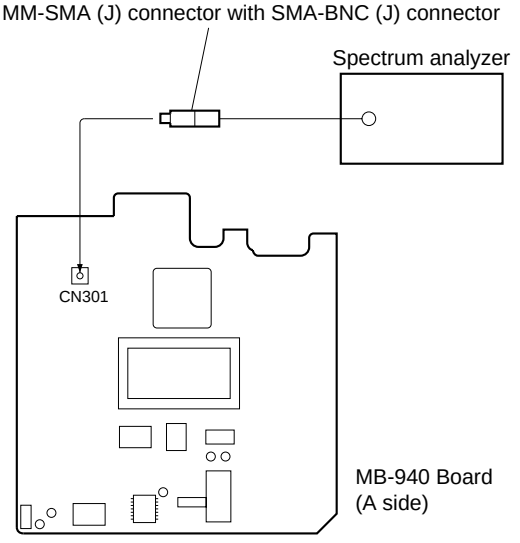
3-2-11. Spurious Emissions Check

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Spectrum analyzer
MM-SMA (J) connector (Part No. J-6402-480-A)
SMA-BNC (J) connector (Part No. J-6402-490-A)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Switch and Control Setting

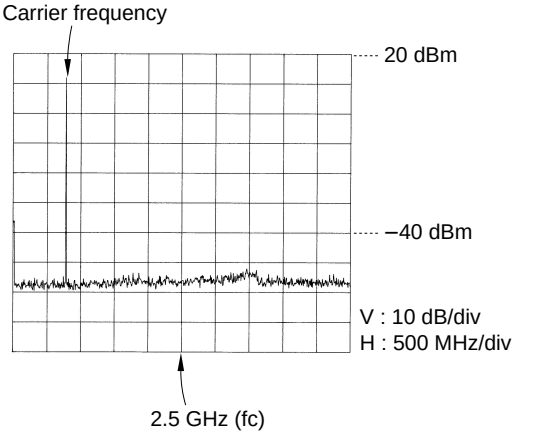
The following setting is to be perform with the SET switch (S402) , "+" switch (S400) and "−" switch (S401).

Transmitting Channel setting:
  CE21 model; Group 00, 22-32 channel (482.000 MHz)
  CE33 model; Group 00, 34-32 channel (578.000 MHz)
  CE62 model; Group 00, 63-32 channel (810.000 MHz)
  CE67 model; Group 00, 68-32 channel (850.000 MHz)
  U14 model; 16-01 channel (482.125 MHz)
  U30 model; 32-01 channel (578.125 MHz)
  U62 model; 64-01 channel (770.125 MHz)
  U66 model; 68-01 channel (794.125 MHz)
Attenuation setting: "Don't Care"
Accumulated time setting: "Don't Care"

Procedure

(1) Set the spectrum analyzer as follows;
  CENTER FREQUENCY: 2.5 GHz
  REFERENCE LEVEL: 20 dBm
  FREQUENCY SPAN: 5 GHz (500 MHz/DIV)
  or Full span
  RBW (resolution band width): 300 kHz
  VBW (video band width): 300 kHz
  ATT: 30 dB

(2) Check that the spurious emissions level (up to 5 GHz) reading for the spectrum analyzer remains below −40 dBm.



Section 4
Spare Parts

4-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Repair parts supplied from Sony Parts Center may not be always identical with the parts which actually in use due to “accommodating the improved parts and/or engineering changes” or “standardization of genuine parts”.
This manual's exploded views and electrical spare parts list are indicating the part numbers of “the standardized genuine parts at present” .

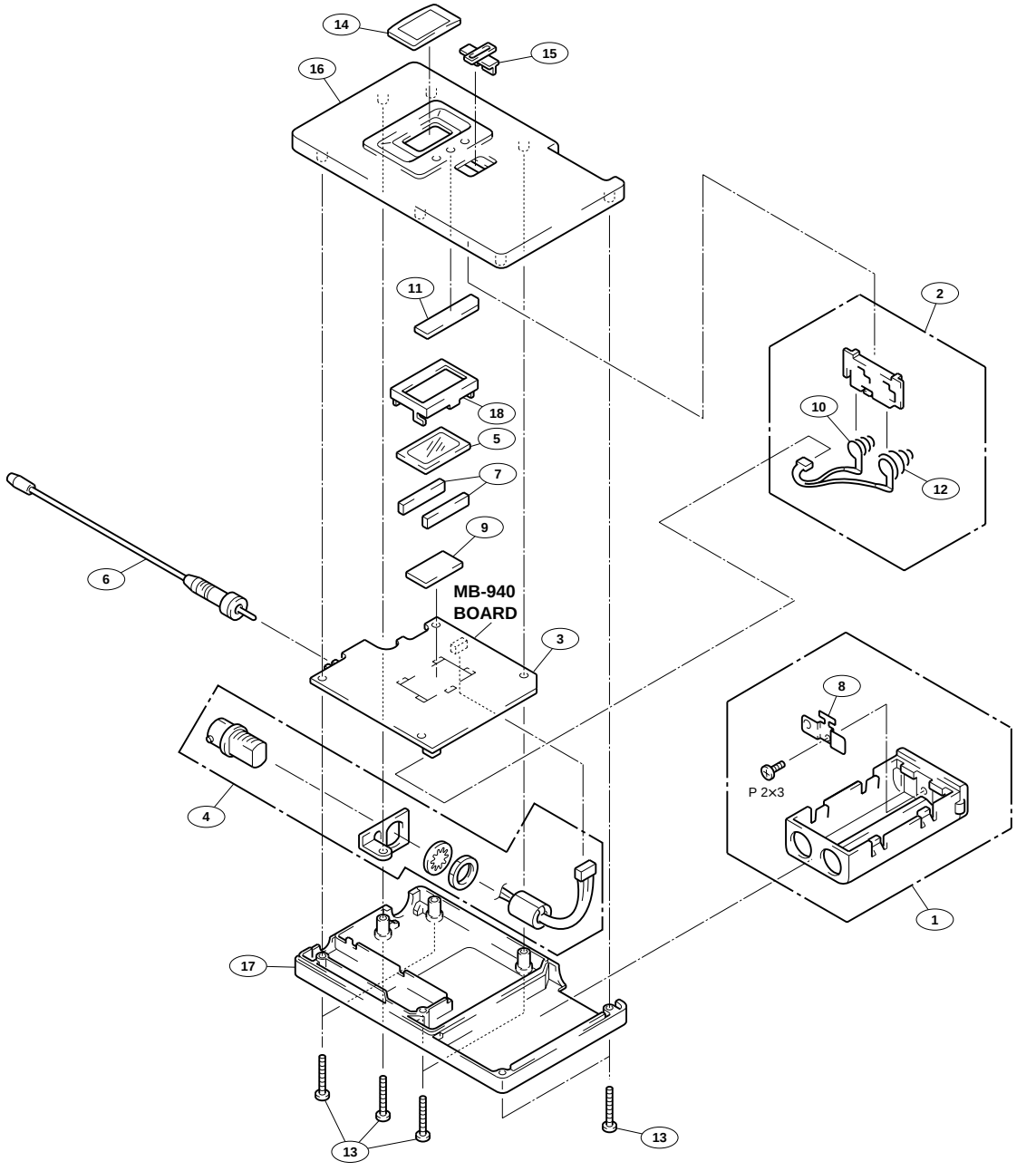
3. Stock of Parts

Parts marked with “o” SP (Supply Code) column of the spare parts list are not normally required for routine service work. Orders for parts marked with “o” will be processed, but allow for additional delivery time.

4. Units for Capacitors, Inductors and Resistors

The following units are assumed in schematic diagrams, electrical parts list and exploded views unless otherwise specified.
Capacitors : μF
Inductors : μH
Resistors : Ω

4-2. Exploded Views



No.	Part No.	SP	Description
1	A-4521-033-D	s	CASE ASSY, BATTERY
2	A-8321-988-A	s	TERMINAL ASSY, BATTERY
3	A-8328-016-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for CE21 model)
	A-8328-022-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for CE33 model)
	A-8328-028-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for CE62 model)
	A-8328-033-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for CE67 model)
	A-8328-037-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for U14 model)
	A-8328-042-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for U30 model)
	A-8328-047-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for U62 model)
	A-8328-052-A	s	MOUNTED CIRCUIT BOARD, MB-940 (B) (for U66 model)
4	A-8328-018-A	s	CONNECTOR ASSY
5	1-467-301-11	s	DISPLAY, LIQUID CRYSTAL
6	1-501-458-12	s	ANTENNA (for CE33/U30 model)
	1-754-177-11	s	ANTENNA (for CE62/CE67/U62/U66 model)
	1-754-178-11	s	ANTENNA (for CE21/U14 model)
7	1-537-802-11	o	CONDUCTIVE BOARD,CONNECTION
8	2-540-502-04	o	TERMINAL BOARD

No.	Part No.	SP	Description
9	2-545-242-01	o	PLATE, LCD
10	2-545-692-01	s	SPRING (HOT), BATTERY
11	2-545-693-01	o	SHEET (SW)
12	2-545-694-01	s	SPRING (GND),BATTERY
13	2-545-695-01	s	B TITE 2x12
14	3-202-103-01	o	PANEL (LCD)
15	3-202-108-02	o	KNOB (P)
16	3-202-109-01	o	CASE (UP)
17	3-202-110-01	o	CASE (DOWN)
18	3-678-343-01	s	CASE (LCD)

4-3. Electrical Parts List

MB-940 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8328-016-A	s	MOUNTED CIRCUIT BOARD, MB-940 (CE21 model)
1pc	A-8328-022-A	s	MOUNTED CIRCUIT BOARD, MB-940 (CE33 model)
1pc	A-8328-028-A	s	MOUNTED CIRCUIT BOARD, MB-940 (CE62 model)
1pc	A-8328-033-A	s	MOUNTED CIRCUIT BOARD, MB-940 (CE67 model)
1pc	A-8328-037-A	s	MOUNTED CIRCUIT BOARD, MB-940 (U14 model)
1pc	A-8328-042-A	s	MOUNTED CIRCUIT BOARD, MB-940 (U30 model)
1pc	A-8328-047-A	s	MOUNTED CIRCUIT BOARD, MB-940 (U62 model)
1pc	A-8328-052-A	s	MOUNTED CIRCUIT BOARD, MB-940 (U66 model)
C100	1-104-852-11	s	CAP, CHIP TANTALUM ELECT 22MF
C101	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C102	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C103	1-104-852-11	s	CAP, CHIP TANTALUM ELECT 22MF
C104	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C105	1-104-852-11	s	CAP, CHIP TANTALUM ELECT 22MF
C106	1-113-642-11	s	CAP, CHIP TANTALUM ELECT 47MF
C107	1-164-938-11	s	CAP, CHIPCERAMIC 1500PF B 1005
C108	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C110	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C111	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C112	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C113	1-164-882-11	s	CAP,CHIP CERAMIC 220PF CH 1005
C114	1-107-688-21	s	CAP, CHIP TANTALUM ELECT 1.5MF
C115	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C116	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C117	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C118	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C119	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C120	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C121	1-117-614-81	s	CAP,CHIP CERAMIC 8200PF B 1005
C122	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C123	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C124	1-164-882-11	s	CAP,CHIP CERAMIC 220PF CH 1005
C125	1-113-500-11	s	CAP, CHIP TANTALUM ELECT 100MF
C126	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C127	1-104-915-95	s	CAP, CHIP TANTALUM ELECT 2.2MF
C129	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C131	1-115-156-11	s	CAP, CERAMIC 1000000PF F 1608
C132	1-115-156-11	s	CAP, CERAMIC 1000000PF F 1608
C133	1-162-970-11	s	CAP,CHIP CERAMIC 10000PF B1608
C134	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C135	1-164-938-11	s	CAP, CHIPCERAMIC 1500PF B 1005
C136	1-164-850-11	s	CAP, CHIP CERAMIC 10PF CH 1005
C137	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C138	1-164-941-11	s	CAP,CHIP CERAMIC 4700PF B 1005
C139	1-164-941-11	s	CAP,CHIP CERAMIC 4700PF B 1005
C140	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C141	1-164-939-11	s	CAP, CHIPCERAMIC 2200PF B 1005
C142	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C143	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
C144	1-107-819-11	s	CAP,CHIP CERAMIC 22000PF B1005
C145	1-110-563-11	s	CAP, CERAMIC 68000PF B (1608)
C146	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF (CE21/CE33/CE62/CE67 model)
C200	1-113-642-11	s	CAP, CHIP TANTALUM ELECT 47MF

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C201	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C202	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C203	1-164-858-11	s	CAP, CHIP CERAMIC 22PF CH 1005
C204	1-164-858-11	s	CAP, CHIP CERAMIC 22PF CH 1005
C209	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C210	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C211	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C213	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C214	1-164-934-11	s	CAP, CHIP CERAMIC 330PF B 1005
C215	1-164-939-11	s	CAP, CHIPCERAMIC 2200PF B 1005
C216	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C218	1-164-858-11	s	CAP, CHIP CERAMIC 22PF CH 1005
C219	1-164-858-11	s	CAP, CHIP CERAMIC 22PF CH 1005
C230	1-164-939-11	s	CAP, CHIPCERAMIC 2200PF B 1005
C231	1-164-934-11	s	CAP, CHIP CERAMIC 330PF B 1005
C232	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C233	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C234	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C235	1-164-936-11	s	CAP, CHIP CERAMIC 680PF B 1005
C236	1-164-880-11	s	CAP,CHIP CERAMIC 180PF CH 1005
C237	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C238	1-162-977-11	s	CAP, CERAMIC 1800PF B 1608
C300	1-113-642-11	s	CAP, CHIP TANTALUM ELECT 47MF
C301	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C302	1-113-642-11	s	CAP, CHIP TANTALUM ELECT 47MF
C303	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C304	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C305	1-164-843-11	s	CAP, CHIP CERAMIC 3PF CJ 1005
C307	1-135-210-11	s	CAP,CHIP TANTALUM ELECT 4.7MF
C308	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C309	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C310	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C312	1-164-874-11	s	CAP,CHIP CERAMIC 100PF CH 1005
C314	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C316	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C317	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C318	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C320	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C321	1-164-858-11	s	CAP, CHIP CERAMIC 22PF CH 1005
C322	1-162-905-11	s	CAP, CERAMIC 1.0PF CK 1608
C323	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C324	1-162-905-11	s	CAP,CERAMIC 1.0PF CK 1608 (CE67 model)
	1-162-908-11	s	CAP,CERAMIC 3.0PF CJ 1608 (CE62/U62/U66 model)
	1-162-910-11	s	CAP,CERAMIC 5.0PF CH 1608 (CE21/CE33/U14/U30 model)
C325	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C326	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C327	1-162-908-11	s	CAP,CERAMIC 3.0PF CJ 1608 (CE33/CE62/CE67/U30/U62/U66 model)
	1-162-909-11	s	CAP, CERAMIC 4.0PF CH 1608 (CE21/U14 model)
C329	1-162-913-11	s	CAP,CERAMIC 8.0PF CH 1608 (CE21/CE33/U14/U30 model)
	1-162-927-11	s	CAP,CERAMIC 100PF CH 1608 (CE62/CE67/U62/U66 model)
C350	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C351	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C370	1-162-908-11	s	CAP, CERAMIC 3.0PF CJ 1608

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C371	1-162-908-11	s	CAP,CERAMIC 3.0PF CJ 1608 (CE33/CE62/CE67/U30/U62/U66 model)
	1-162-910-11	s	CAP,CERAMIC 5.0PF CH 1608 (CE21/U14 model)
C372	1-162-908-11	s	CAP,CERAMIC 3.0PF CJ 1608 (CE33/CE62/CE67/U30/U62/U66 model)
	1-162-911-11	s	CAP,CERAMIC 6.0PF CH 1608 (CE21/U14 model)
C400	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C401	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C402	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C403	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C404	1-164-868-11	s	CAP, CHIP CERAMIC 56PF CH 1005
C405	1-164-845-11	s	CAP, CHIP CERAMIC 5PF CH 1005
C406	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C407	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C408	1-104-915-11	s	CAP,CHIP TANTALUM ELECT 2.2MF
C409	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
C410	1-104-852-11	s	CAP, CHIP TANTALUM ELECT 22MF
C411	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C412	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C413	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C414	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C415	1-119-923-81	s	CAP, CHIP CERAMIC 0.047MF
C416	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C417	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C418	1-164-937-11	s	CAP, CHIPCERAMIC 1000PF B 1005
C500	1-117-887-91	s	CAP, CHIP TANTALUM ELECT 220MF
C501	1-117-887-91	s	CAP, CHIP TANTALUM ELECT 220MF
C502	1-115-170-11	s	CAP, TANTALUM ELECT 4.7MF
C503	1-162-977-11	s	CAP, CERAMIC 1800PF B 1608
C504	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
C505	1-164-866-11	s	CAP, CHIP CERAMIC 47PF CH 1005
C506	1-117-372-11	s	CAP, TANTALUM ELECT 100MF
C507	1-104-852-11	s	CAP, CHIP TANTALUM ELECT 22MF
C508	1-115-170-11	s	CAP, TANTALUM ELECT 4.7MF
C516	1-104-851-11	s	CAP, CHIP TANTALUM ELECT 10MF
C517	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C518	1-164-943-11	s	CAP,CHIP CERAMIC 10000PF B1005
C519	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
C520	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
C521	1-125-777-11	s	CAP, CHIP CERAMIC 0.1MF B 1005
CN102	1-779-884-11	s	CONNECTOR 4P
CN300	1-750-004-11	o	SOCKET, SIL 2P
CN301	1-774-915-11	s	CONNECTOR, COAXIAL
CN400	1-770-623-21	s	PIN, CONNECTOR 6P
CN501	1-770-619-11	o	PIN, CONNECTOR 2P
CP300	1-781-489-11	s	OSCILLATOR (VCO) (U62 model)
	1-781-491-11	s	OSCILLATOR (VCO) (U66 model)
	1-781-493-11	s	OSCILLATOR (VCO) (CE67 model)
	1-795-180-21	s	OSCILLATOR (VCO) (CE21/U14 model)
	1-795-184-21	s	OSCILLATOR (VCO) (CE33/U30 model)
	1-795-210-21	s	OSCILLATOR (VCO) (CE62 model)
CP301	1-251-830-21	s	ISOLATOR (CE62 model)
	1-251-831-21	s	ISOLATOR (CE67 model)
	1-251-958-21	s	ISOLATOR (U66 model)
	1-251-962-21	s	ISOLATOR (CE21/U14 model)
	1-251-966-21	s	ISOLATOR (CE33/U30 model)
	1-251-974-21	s	ISOLATOR (U62 model)
CS300	1-251-820-21	s	COUPLING DIRECTION
CT400	1-141-322-11	s	CAP, CHIP TYPE TRIMMER 20PF

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
D100	8-719-039-99	s	DIODE UMZ8.2T-T106
D104	8-719-421-69	s	DIODE MA133-TX
D105	8-719-421-69	s	DIODE MA133-TX
D106	8-719-421-69	s	DIODE MA133-TX
D107	8-719-421-69	s	DIODE MA133-TX
D108	8-719-049-09	s	DIODE 1SS367-T3SONY
D300	8-719-158-35	s	DIODE RD9.1SB-T1
D301	8-719-421-69	s	DIODE MA133-TX
D302	8-719-421-67	s	DIODE MA132WK-TX
D400	8-719-421-69	s	DIODE MA133-TX
D401	8-719-421-67	s	DIODE MA132WK-TX
D402	8-719-039-99	s	DIODE UMZ8.2T-T106
D403	8-719-039-99	s	DIODE UMZ8.2T-T106
D404	8-719-049-09	s	DIODE 1SS367-T3SONY
D500	8-719-049-09	s	DIODE 1SS367-T3SONY
D502	8-719-039-99	s	DIODE UMZ8.2T-T106
D503	8-719-039-99	s	DIODE UMZ8.2T-T106
D505	8-719-049-09	s	DIODE 1SS367-T3SONY
F100	1-233-322-11	s	FILTER, CHIP EMI
F101	1-233-322-11	s	FILTER, CHIP EMI
F102	1-234-275-21	s	FILTER, LOW PASS
F103	1-233-322-11	s	FILTER, CHIP EMI
F500	1-233-322-11	s	FILTER, CHIP EMI
IC100	8-759-523-00	s	IC TC74HC4051AFT(EL)
IC101	8-759-466-68	s	IC MC33077DR2
IC102	8-759-710-79	s	IC NJM2107F-TE2
IC104	8-759-539-60	s	IC SA575DK-T
IC105	8-759-710-82	s	IC NJM2406F-TE2
IC200	8-759-530-29	s	IC TC4069UBFT(EL,N)
IC201	8-759-209-69	s	IC TC4S11F(TE85R)
IC202	8-759-082-61	s	IC TC4W53FU(TE12R)
IC203	8-759-466-68	s	IC MC33077DR2
IC230	8-759-466-68	s	IC MC33077DR2
IC300	8-752-069-39	s	IC CXA1786N-T4
IC400	8-759-530-30	s	IC TC74VHCU04FT(EL)
IC402	8-759-833-80	s	IC UPD75P3036GK-T822B-V7
IC404	8-759-466-71	s	IC S-80820ANNP-EDH-T2
IC405	8-759-465-76	s	IC AK93C85AM-E1
IC406	8-759-277-63	s	IC TC7W14FU(TE12R)
IC500	8-759-466-67	s	IC RH5RH503B-T1
IC501	8-759-493-53	s	IC S-81233SGUP-DQF-T1
L302	1-414-463-41	s	INDUCTOR, CHIP (J) 10NH (CE67 model)
	1-414-464-11	s	INDUCTOR, CHIP (J) 12NH (CE62/U62/U66 model)
	1-414-469-11	s	INDUCTOR, CHIP (J) 33NH (CE21/CE33/U14/U30 model)
L303	1-414-463-41	s	INDUCTOR, CHIP (J) 10NH (CE21/U14 model)
	1-414-464-11	s	INDUCTOR, CHIP (J) 12NH (CE33/CE62/CE67/U30/U62/U66 model)
L304	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH
L305	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE33/CE62/CE67/U30/U62/U66 model)
	1-414-470-31	s	INDUCTOR, CHIP (J) 39NH (CE21/U14 model)
L307	1-414-464-11	s	INDUCTOR, CHIP (J) 12NH (CE62/CE67/U62/U66 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE21/CE33/U14/U30 model)
L370	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE33/CE62/CE67/U30/U62/U66 model)
	1-414-470-31	s	INDUCTOR, CHIP (J) 39NH (CE21/U14 model)

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description	
L371	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH	
L372	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE33/CE62/CE67/U30/U62/U66 model)	
	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE21/U14 model)	
L400	1-414-394-11	s	INDUCTOR (SMD) 2.2UH	
L401	1-414-394-11	s	INDUCTOR (SMD) 2.2UH	
L500	1-414-398-11	s	INDUCTOR (SMD) 10UH	
Q101	8-729-928-27	s	TRANSISTOR DTA144EE-TL	
Q102	8-729-015-66	s	TRANSISTOR 2SC4919-TL (CE21/CE33/CE62/CE67 model)	
Q103	8-729-031-69	s	TRANSISTOR 2SA1965-TL (CE21/CE33/CE62/CE67 model)	
Q104	8-729-015-66	s	TRANSISTOR 2SC4919-TL	
Q200	8-729-425-64	s	TRANSISTOR 2SC4738-YGR-TE85L	
Q201	8-729-015-66	s	TRANSISTOR 2SC4919-TL	
Q230	8-729-031-69	s	TRANSISTOR 2SA1965-TL	
Q300	8-729-425-64	s	TRANSISTOR 2SC4738-YGR-TE85L	
Q301	8-729-031-69	s	TRANSISTOR 2SA1965-TL	
Q302	8-729-031-69	s	TRANSISTOR 2SA1965-TL	
Q303	8-729-039-32	s	TRANSISTOR 2SC5015-T1	
Q304	8-729-231-69	s	TRANSISTOR 2SC3607-TE12L	
Q350	8-729-425-64	s	TRANSISTOR 2SC4738-YGR-TE85L	
Q400	8-729-928-90	s	TRANSISTOR DTC114EE-TL	
Q500	8-729-041-51	s	TRANSISTOR FMMT617TA	
Q501	8-729-031-69	s	TRANSISTOR 2SA1965-TL	
Q502	8-729-425-18	s	TRANSISTOR XN4504-TX	
Q503	8-729-928-90	s	TRANSISTOR DTC114EE-TL	
Q508	8-729-031-69	s	TRANSISTOR 2SA1965-TL	
Q509	8-729-928-90	s	TRANSISTOR DTC114EE-TL	
Q510	8-729-425-64	s	TRANSISTOR 2SC4738-YGR-TE85L	
R100	1-208-671-11	s	RES, CHIP 330	(1005)
R101	1-208-715-11	s	RES, CHIP 22K	(1005)
R104	1-208-695-11	s	RES, CHIP 3.3K	(1005)
R105	1-218-958-11	s	RES, CHIP 2.7K	(1005)
R106	1-208-689-11	s	RES, CHIP 1.8K	(1005)
R107	1-208-687-11	s	RES, CHIP 1.5K	(1005)
R108	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R109	1-208-679-11	s	RES, CHIP 680	(1005)
R110	1-208-675-11	s	RES, CHIP 470	(1005)
R111	1-218-849-11	s	RES, CHIP 1.2K	(1005)
R112	1-208-935-11	s	RES, CHIP 100K	(1005)
R113	1-208-935-11	s	RES, CHIP 100K	(1005)
R114	1-208-935-11	s	RES, CHIP 100K	(1005)
R115	1-208-707-11	s	RES, CHIP 10K	(1005)
R116	1-208-707-11	s	RES, CHIP 10K	(1005)
R117	1-208-935-11	s	RES, CHIP 100K	(1005)
R118	1-208-935-11	s	RES, CHIP 100K	(1005)
R119	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R120	1-208-894-81	s	RES, CHIP 2.0K	(1005)
R123	1-208-707-11	s	RES, CHIP 10K	(1005)
R125	1-208-698-11	s	RES, CHIP 4.3K	(1005)
R126	1-218-849-11	s	RES, CHIP 1.2K	(1005)
R127	1-208-955-11	s	RES, CHIP 680K	(1005)
R128	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R129	1-208-935-11	s	RES, CHIP 100K	(1005)
R130	1-218-849-11	s	RES, CHIP 1.2K	(1005)
R131	1-208-707-11	s	RES, CHIP 10K	(1005)
R132	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R133	1-208-703-11	s	RES, CHIP 6.8K	(1005)

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description	
R134	1-208-885-11	s	RES, CHIP 820	(1005)
R135	1-208-719-11	s	RES, CHIP 33K	(1005)
R136	1-208-719-11	s	RES, CHIP 33K	(1005)
R137	1-218-989-11	s	RES, CHIP 1M	(1005)
R138	1-208-713-11	s	RES, CHIP 18K	(1005)
R139	1-218-732-11	s	RES, METAL FILM CHIP 47K (U14/U30/U62/U66 model)	
	1-218-740-11	s	RES, METAL FILM CHIP 100K (CE21/CE33/CE62/CE67 model)	
R140	1-208-935-11	s	RES, CHIP 100K	(1005)
R141	1-218-716-11	s	RES, METAL FILM CHIP 10K (U14/U30/U62/U66 model)	
	1-218-708-11	s	RES, METAL FILM CHIP 4.7K (CE21/CE33/CE62/CE67 model)	
R142	1-208-935-11	s	RES, CHIP 100K	(1005)
R143	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R144	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R145	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R146	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R147	1-218-982-11	s	RES, CHIP 270K	(1005)
R148	1-208-691-11	s	RES, CHIP 2.2K	(1005)
R149	1-208-695-11	s	RES, CHIP 3.3K	(1005)
R150	1-208-695-11	s	RES, CHIP 3.3K	(1005)
R151	1-208-935-11	s	RES, CHIP 100K	(1005)
R152	1-208-935-11	s	RES, CHIP 100K	(1005)
R153	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R154	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R155	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R156	1-216-864-91	s	CONDUCTOR,CHIP (1608) (CE21/CE33/CE62/CE67 model)	
R157	1-216-864-91	s	CONDUCTOR,CHIP (1608) (U14/U30/U62/U66 model)	
R158	1-218-941-11	s	RES, CHIP 100	(1005)
R200	1-219-570-11	s	RES, CHIP 10M	(1608)
R201	1-218-985-11	s	RES, CHIP 470K	(1005)
R202	1-208-935-11	s	RES, CHIP 100K	(1005)
R206	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R207	1-208-935-11	s	RES, CHIP 100K	(1005)
R208	1-208-719-11	s	RES, CHIP 33K	(1005)
R209	1-208-719-11	s	RES, CHIP 33K	(1005)
R210	1-208-927-11	s	RES, CHIP 47K	(1005)
R211	1-208-927-11	s	RES, CHIP 47K	(1005)
R212	1-208-935-11	s	RES, CHIP 100K	(1005)
R213	1-208-935-11	s	RES, CHIP 100K	(1005)
R214	1-208-935-11	s	RES, CHIP 100K	(1005)
R215	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R216	1-208-691-11	s	RES, CHIP 2.2K	(1005)
R217	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R218	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R219	1-208-935-11	s	RES, CHIP 100K	(1005)
R220	1-208-939-11	s	RES, CHIP 150K	(1005)
R221	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R222	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R223	1-208-707-11	s	RES, CHIP 10K	(1005)
R224	1-218-985-11	s	RES, CHIP 470K	(1005)
R225	1-219-570-11	s	RES, CHIP 10M	(1608)
R226	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R230	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R231	1-208-701-11	s	RES, CHIP 5.6K	(1005)
R232	1-208-691-11	s	RES, CHIP 2.2K	(1005)
R233	1-208-927-11	s	RES, CHIP 47K	(1005)
R234	1-208-927-11	s	RES, CHIP 47K	(1005)

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description	
R235	1-208-935-11	s	RES, CHIP 100K	(1005)
R236	1-208-711-11	s	RES, CHIP 15K	(1005)
R237	1-208-711-11	s	RES, CHIP 15K	(1005)
R238	1-218-958-11	s	RES, CHIP 2.7K	(1005)
R240	1-208-707-11	s	RES, CHIP 10K	(1005)
R300	1-208-707-11	s	RES, CHIP 10K	(1005)
R301	1-208-715-11	s	RES, CHIP 22K	(1005)
R302	1-208-927-11	s	RES, CHIP 47K	(1005)
R303	1-208-935-11	s	RES, CHIP 100K	(1005)
R304	1-216-841-11	s	RES, CHIP 47K	(1608)
R305	1-218-678-11	s	RES, METAL FILM CHIP 270 (CE21/CE33/U14/U30 model)	
	1-218-680-11	s	RES, METAL FILM CHIP 330 (U62 model)	
	1-218-682-11	s	RES, METAL FILM CHIP 390 (CE62/CE67/U66 model)	
R306	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R307	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R308	1-208-927-11	s	RES, CHIP 47K	(1005)
R309	1-208-691-11	s	RES, CHIP 2.2K	(1005)
R310	1-208-927-11	s	RES, CHIP 47K	(1005)
R311	1-208-935-11	s	RES, CHIP 100K	(1005)
R312	1-208-647-11	s	RES, CHIP 33	(1005)
R313	1-208-713-11	s	RES, CHIP 18K	(1005)
R314	1-208-707-11	s	RES, CHIP 10K	(1005)
R315	1-218-666-11	s	RES, METAL FILM CHIP 82	
R316	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R317	1-218-652-11	s	RES, METAL FILM CHIP 22 (CE67 model)	
	1-218-656-11	s	RES, METAL FILM CHIP 33 (CE21/CE33/CE62/U14/U30/U62/U66 model)	
R318	1-218-692-11	s	RES, METAL FILM CHIP 1.0K	
R329	1-208-652-11	s	RES, CHIP 51	(1005)
R350	1-208-927-11	s	RES, CHIP 47K	(1005)
R400	1-218-876-11	s	RES, CHIP 16K	(1608)
R401	1-216-836-11	s	RES, CHIP 18K	(1608)
R402	1-218-941-11	s	RES, CHIP 100	(1005)
R403	1-208-707-11	s	RES, CHIP 10K	(1005)
R404	1-218-989-11	s	RES, CHIP 1M	(1005)
R405	1-208-689-11	s	RES, CHIP 1.8K	(1005)
R406	1-208-935-11	s	RES, CHIP 100K	(1005)
R407	1-208-707-11	s	RES, CHIP 10K	(1005)
R408	1-208-927-11	s	RES, CHIP 47K	(1005)
R410	1-208-935-11	s	RES, CHIP 100K	(1005)
R411	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R412	1-208-935-11	s	RES, CHIP 100K	(1005)
R413	1-208-715-11	s	RES, CHIP 22K	(1005)
R414	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R415	1-208-715-11	s	RES, CHIP 22K	(1005)
R416	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R417	1-208-935-11	s	RES, CHIP 100K	(1005)
R418	1-208-715-11	s	RES, CHIP 22K	(1005)
R419	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R420	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R421	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R422	1-208-707-11	s	RES, CHIP 10K	(1005)
R423	1-208-935-11	s	RES, CHIP 100K	(1005)
R424	1-208-927-11	s	RES, CHIP 47K	(1005)
R425	1-208-927-11	s	RES, CHIP 47K	(1005)
R426	1-208-927-11	s	RES, CHIP 47K	(1005)
R427	1-208-935-11	s	RES, CHIP 100K	(1005)

(MB-940 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description	
R430	1-208-935-11	s	RES, CHIP 100K	(1005)
R500	1-208-935-11	s	RES, CHIP 100K	(1005)
R501	1-218-941-11	s	RES, CHIP 100	(1005)
R502	1-208-687-11	s	RES, CHIP 1.5K	(1005)
R503	1-208-635-11	s	RES, CHIP 10	(1005)
R504	1-218-958-11	s	RES, CHIP 2.7K	(1005)
R505	1-208-927-11	s	RES, CHIP 47K	(1005)
R506	1-208-683-11	s	RES, CHIP 1.0K	(1005)
R514	1-218-941-11	s	RES, CHIP 100	(1005)
R515	1-208-707-11	s	RES, CHIP 10K	(1005)
R516	1-208-935-11	s	RES, CHIP 100K	(1005)
R517	1-208-707-11	s	RES, CHIP 10K	(1005)
R518	1-208-935-11	s	RES, CHIP 100K	(1005)
R520	1-208-707-11	s	RES, CHIP 10K	(1005)
R521	1-208-699-11	s	RES, CHIP 4.7K	(1005)
R522	1-208-715-11	s	RES, CHIP 22K	(1005)
RV101	1-223-348-11	s	RES, ADJ, CERMET 22K	
RV102	1-223-348-11	s	RES, ADJ, CERMET 22K	
RV201	1-223-348-11	s	RES, ADJ, CERMET 22K	
RV202	1-223-349-11	s	RES, ADJ, CERMET 47K	
RV300	1-223-348-11	s	RES, ADJ, CERMET 22K	
S400	1-762-526-11	s	SWITCH	
S401	1-762-526-11	s	SWITCH	
S402	1-762-526-11	s	SWITCH	
S500	1-771-667-11	s	SWITCH, SLIDE	
T100	1-423-265-21	s	TRANSFORMER, INPUT	
T500	1-433-795-21	s	TRANSFORMER, DC-DC CONVETER	
X200	1-767-314-11	s	VIBRATOR, CRYSTAL	
X201	1-760-458-21	s	VIBRATOR, CRYSTAL	
X400	1-760-474-11	s	VIBRATOR, CRYSTAL	

4-4. Supplied Accessories

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-501-458-12	s	ANTENNA (CE33/U30 model)
1pc	1-754-177-11	s	ANTENNA (CE62/CE67/U62/U66 model)
1pc	1-754-178-11	s	ANTENNA (CE21/U14 model)
1pc	1-467-301-11	s	DISPLAY, LIQUID CRYSTAL
2pcs	1-537-802-11	o	CONDUCTIVE BOARD, CONNECTION

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-500-249-21	s	BEAD, FERRITE (CASE) (CE21 model)
1pc	2-540-964-01	s	CASE, SOFT
1pc	3-205-119-11	s	FREQUENCY LIST (CE21 model)
1pc	3-205-123-11	s	FREQUENCY LIST (CE33 model)
1pc	3-205-133-11	s	FREQUENCY LIST (CE62 model)
1pc	3-205-135-11	s	FREQUENCY LIST (CE67 model)
1pc	3-205-136-11	s	FREQUENCY LIST (U14 model)
1pc	3-205-140-11	s	FREQUENCY LIST (U30 model)
1pc	3-205-148-11	s	FREQUENCY LIST (U62 model)
1pc	3-205-149-11	s	FREQUENCY LIST (U66 model)
1pc	3-205-431-11	s	OPERATING INSTRUCTIONS (GB)
1pc	3-205-431-21	s	OPERATING INSTRUCTIONS (FR)
1pc	3-205-431-31	s	OPERATING INSTRUCTIONS (DE) (CE21/CE33/CE62/CE67 model)
1pc	3-205-431-41	s	OPERATING INSTRUCTIONS (ES)

Section 5
Semiconductor Pin Assignments

The semiconductors in the manual are listed by equivalent types. Thus the external view or the index mark indication may differ from the actual type.
In some cases incompatible types are also listed, therefore, when a part is to be replaced, also refer to the Spare Parts section. Pin assignments and block diagrams are based on the IC manufacturer's data book.

DIODE	Page
1SS367-T3SONY	5-2
MA132WK-TX	5-2
MA133-TX	5-2
RD9.1SB-T1	5-2
UMZ8.2T-T106	5-2

TRANSISTOR	Page
2SA1965-TL	5-2
2SC3607-TE12L	5-2
2SC4738-YGR-TE85L	5-2
2SC4919-TL	5-2
2SC5015-T1	5-2
DTA144EE-TL	5-2
DTC114EE-TL	5-2
FMMT617TA	5-2
XN4504-TX	5-2

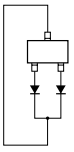
IC	Page
AK93C85AM-E2	5-3
CXA1786N-T4	5-3
MC33077DR2	5-3
NJM2107F-TE2	5-3
NJM2406F-TE2	5-3
RH5RH503B-T1	5-3
S-80820ANNP-EDH-T2	5-3
S-81233SGUP-DQF-T1	5-3
SA575DK-T	5-4
TC4069UBFT (EL,N)	5-4
TC4S11F (TE85R)	5-4
TC4W53FU (TE12R)	5-4
TC74HC4051AFT (EL)	5-4
TC74VHCU04FT (EL)	5-4
TC7W14FU (TE12R)	5-4

DIODE

-TOP VIEW-

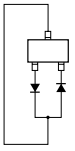
1SS367-T3SONY

-TOP VIEW-



MA132WK-TX
UMZ8.2T-T106

-TOP VIEW-

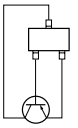


MA133-TX

-TOP VIEW-

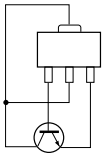
RD9.1SB-T1

-TOP VIEW-



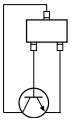
2SA1965-TL

-TOP VIEW-



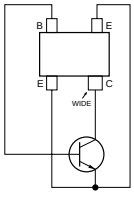
2SC3607-TE12L

-TOP VIEW-



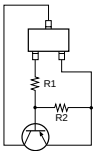
2SC4738-YGR-TE85L
2SC4919-TL
FMMT617TA

-TOP VIEW-



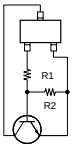
2SC5015-T1

-TOP VIEW-



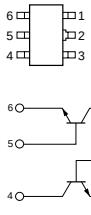
DTA144EE-TL
(R1=47 k, R2=47 k)

-TOP VIEW-



DTC114EE-TL
(R1=10 k, R2=10 k)

-TOP VIEW-



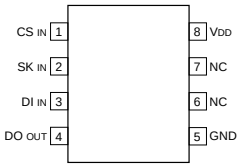
XN4504-TX

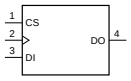
IC

AK93C85AM-E2 (ASAHI)

C-MOS 16,384-BIT SERIAL EEPROM

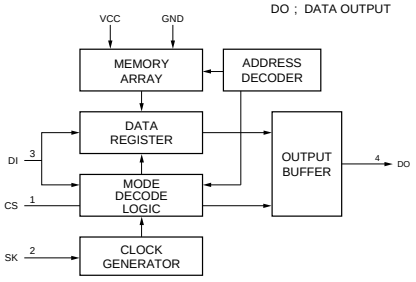
—TOP VIEW—





INPUT
CS ; CHIP SELECT
DI ; DATA INPUT
SK ; SERIAL CLOCK

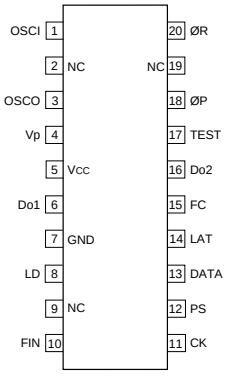
OUTPUT
DO ; DATA OUTPUT



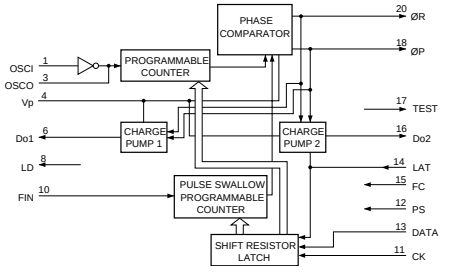
CXA1786N-T4 (SONY)

PLL FREQUENCY SYNTHESIZER (1.1 GHz BAND)

—TOP VIEW—



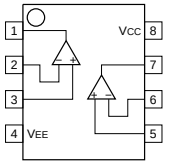
OSCI : REFERENCE FREQUENCY INPUT
OSCO : REFERENCE FREQUENCY OUTPUT
Vp : POWER SUPPLY FOR CHARGE PUMP, PHASE COMPARATOR
Do1 : CHARGE PUMP 1 OUTPUT
Do2 : CHARGE PUMP 2 OUTPUT
LD : LOCK DETECTION SIGNAL OUTPUT
ØP : PHASE COMPARATOR OUTPUT
ØR : PHASE COMPARATOR OUTPUT
CK : CLOCK INPUT
DATA : DATA INPUT
LAT : LATCH INPUT
PS : POWER SAVE INPUT ("L" : POWER SAVE MODE)
FC : SELECTION TERMINAL FOR PHASE OF PHASE COMPARATOR OUTPUT AND COUNTER OUTPUT SIGNAL TO TEST TERMINAL
TEST : OUTPUT FOR DIVIDING SIGNAL OF COUNTER



MC33077DR2 (MOTOROLA)

DUAL OPERATIONAL AMPLIFIERS

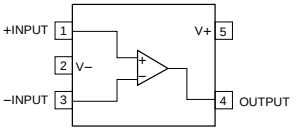
—TOP VIEW—



NJM2107F-TE2 (JRC)

SINGLE OPERATIONAL AMPLIFIER

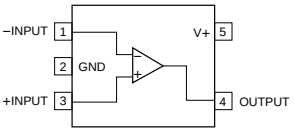
—TOP VIEW—



NJM2406F-TE2 (JRC)

SINGLE COMPARATOR

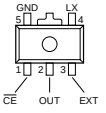
—TOP VIEW—

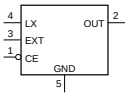


RH5RH503B-T1 (RICOH)

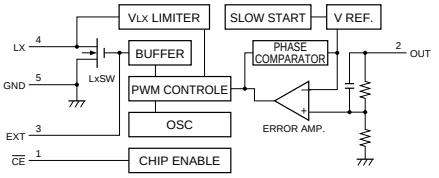
C-MOS PWM STEP-UP DC/DC CONVERTER

—TOP VIEW—





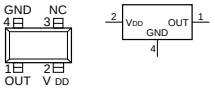
LX ; SWITCHING TERMINAL (OPEN DRAIN)
EXT ; EXTERNAL TRANSISTOR DRIVE (CMOS OUTPUT)
$\overline{CE}$; CHIP ENABLE
OUT ; STEP-UP OUTPUT VOLTAGE MONITOR

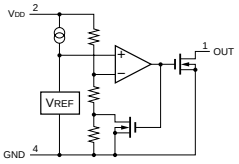


S-80820ANNP-EDH-T2 (SEIKO)

VOLTAGE DETECTOR

—TOP VIEW—

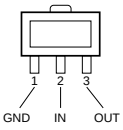


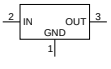


S-81233SGUP-DQF-T1 (SEIKO)

POSITIVE VOLTAGE REGULATOR

—TOP VIEW—

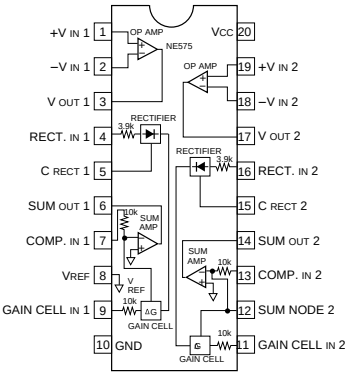




SA575DK-T (PHILIPS)

LOW VOLTAGE COMPANDOR

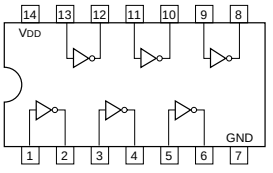
—TOP VIEW—

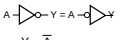


TC4069UBFT (EL,N) (TOSHIBA)

C-MOS INVERTER

—TOP VIEW—





$Y = \overline{A}$

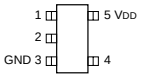
A	Y
0	1
1	0

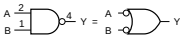
0 ; LOW LEVEL
1 ; HIGH LEVEL

TC4S11F (TE85R) (TOSHIBA)

C-MOS 2-INPUT NAND GATE

—TOP VIEW—





$Y = \overline{A \cdot B} = A + B$

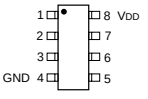
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

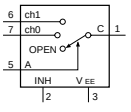
0 : LOW LEVEL
1 : HIGH LEVEL

TC4W53FU (TE12R) (TOSHIBA)

C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER

—TOP VIEW—





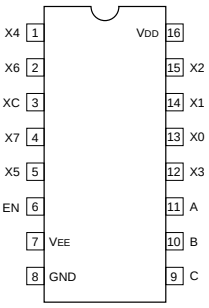
CONT. INPUT		ON
INH	A	CHANNEL
0	0	ch0
0	1	ch1
1	×	OPEN

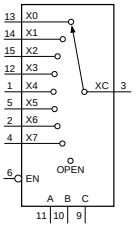
0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

TC74HC4051AFT (EL) (TOSHIBA)

C-MOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER

—TOP VIEW—





X0 - X7 : ANALOG INPUTS/OUTPUTS
XC : COMMON INPUT/OUTPUT
A, B, C : CHANNEL SELECT INPUT
EN : ENABLE INPUT

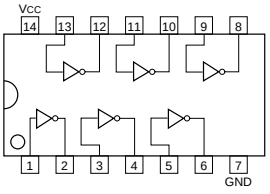
CONTROL INPUTS				SELECTED CHANNEL
EN	SELECT			
	C	B	A	
0	0	0	0	X0
0	0	0	1	X1
0	0	1	0	X2
0	0	1	1	X3
0	1	0	0	X4
0	1	0	1	X5
0	1	1	0	X6
0	1	1	1	X7
1	x	x	x	OPEN

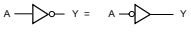
0 : LOW LEVEL
1 : HIGH LEVEL
x : DON'T CARE

TC74VHCU04FT (EL) (TOSHIBA)

HEX INVERTERS

—TOP VIEW—





Y = A

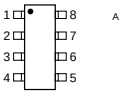
A	Y
0	1
1	0

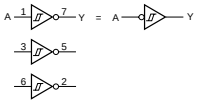
0 : LOW LEVEL
1 : HIGH LEVEL

TC7W14FU (TE12R) (TOSHIBA)

C-MOS HEX INVERTERS

—TOP VIEW—





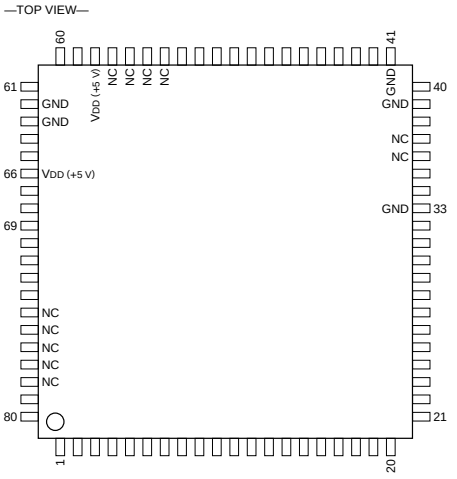
Y = A

A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

CPU Pin Description : IC402

UPD753036GK


—TOP VIEW—
60
41
61
40
66
33
69
80
21
1
20
GND
VDD (+5 V)
NC
GND
NC
GND
NC
NC
NC

Section 6
Block Diagram

Description

WRT-822B is comprised of the following:

MB-940 board

Audio and peripheral circuit block; Ref. No. 100s and 200s
PLL and RF circuit block; Ref. No. 300s
CPU and peripheral circuit block; Ref. No. 400s
Power supply circuit block; Ref. No. 500s

Audio and peripheral circuit block

The audio signal which is input from the AUDIO input connector (CN100) is input into the transformer (T100) as an balance signal.
The audio signal which is outputted from the transformer (T100) is input into the Audio attenuator (ATT) circuit (IC100).
The ATT can be set between 0 to 21 dB in 3 dB steps by switching the resistance value using analog switch (IC100).
The control signal for the analog switch is the 3 bits (ATT0, ATT1, ATT2) signal that has been sent from the CPU (IC402).
This signal is set by the information on + or − switches (S400 and S401) input to the CPU.
The audio signal which is adjusted the volume by the ATT circuit is amplified by IC101(1/2), then input into the compressor circuit (IC104) via the low-pass filter (F102) and buffer amplifier (IC203-1/2).
The audio signal is compressed to a signal level of 2:1 (1/2) by the compressor circuit and then inputs into the pre-emphasis circuit. Note that time constant for the pre-emphasis is 50 μs.
The audio signal is mixed with the tone signal (X201, 32.768 kHz) and battery alarm signal (X200, 32.782 kHz) and is sent RF circuit block (VCO,CP300) via the AF switch (IC202) and AF filter (IC230).
The A/D converter circuit (IC102, D104, D400) detects the audio signal and converts into DC level voltage. The converted signal (ALO signal) is sent to the CPU and is used to indicate the input audio signal level on the LCD (ND400).

PLL and RF circuit block

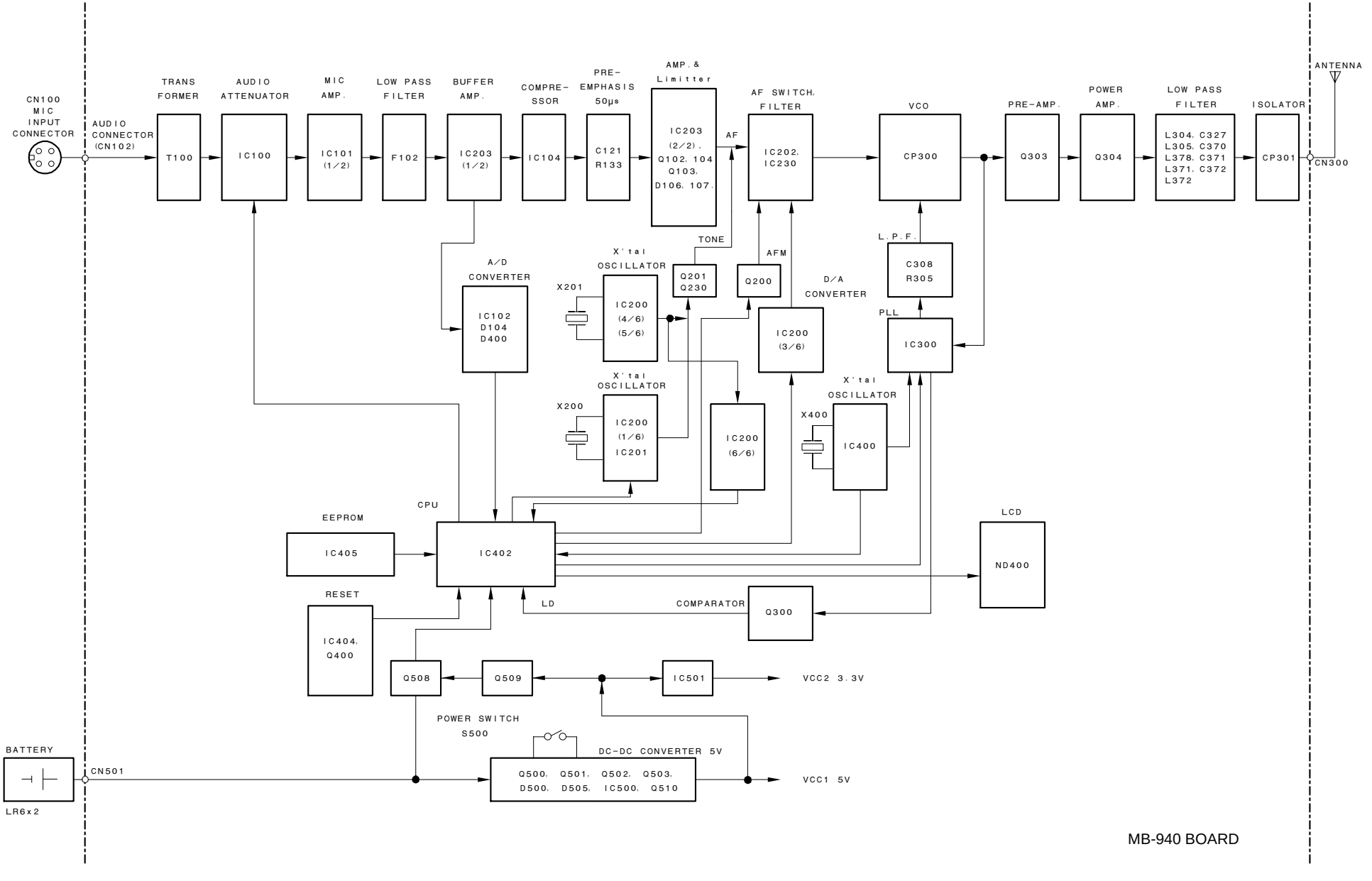
The oscillation circuit utilizes the PLL frequency synthesizer method. The VCO (CP300) acts as an oscillator and modulator for the carrier frequency through voltage control.
The carrier frequency is controlled by the serial data (PLL data) sent from the CPU to the PLL IC (IC300).
The signal is amplified by the RF amplifier circuit (Q303,304) is output from the antenna via the low-pass filters and isolator (CP301).
Further the voltage comparator (Q300) detects the lock condition of the PLL by inputting the output signal (LD signal) from the phase comparator in the PLL IC, and sends the signal to CPU.
The voltage control circuit (Q301, 302) performs ON/OFF control of the power voltage for the RF circuit. This control signal is the RFM signal from the CPU. (When the RFM signal switches “L”, the power is provided to the RF circuit.)

CPU and the peripheral circuit block

The CPU (IC402) is a 4-bit microprocessor, and the clock is used a 4 MHz (X400, IC400).
The CPU sends out the PLL data, and controls the AF mute, RF mute, ATT, LCD, and so on.
The PLL (frequency) data have been written to the EEPROM (IC405).
The voltage detector circuit (IC403, 404) detects the power supply voltage (+2.0 V) and uses it to reset the CPU.
Also, the reference voltage circuit (R402, C401) generates a 3.0 V which is used by the CPU as the reference for detecting battery voltage and AF indicator voltages.

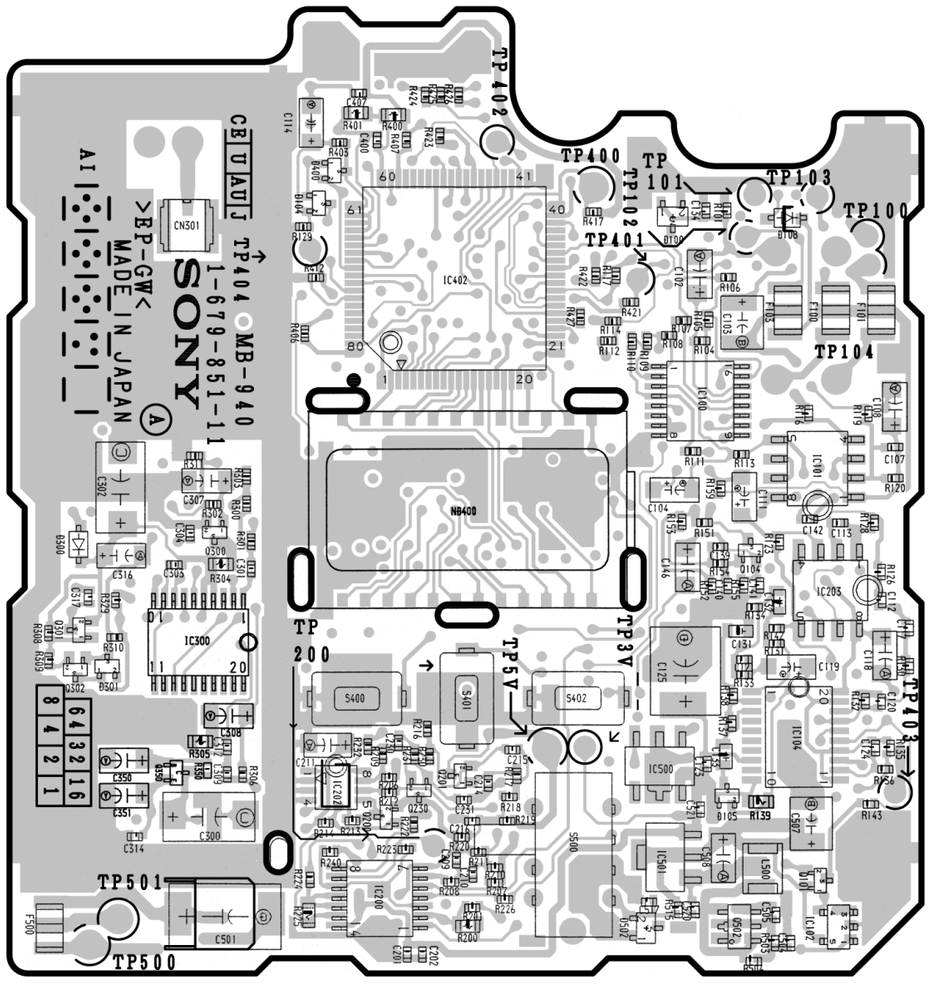
Power supply circuit block

The DC-DC converter circuit (IC500, Q500, Q501, Q502, D500, D505) extracts the 5 V (Vcc1) from the 3.0 V battery voltage and supplies to audio section.
The DC-DC converter circuit (IC501) extracts the 3.3 V (Vcc2) from the 5 V (Vcc1) and supplies to RF and CPU sections.
The power switch circuit performs ON/OFF control of voltage input to the DC-DC converter. This is controlled by power switch circuit (S500, Q503, Q510) and CPU (IC402).

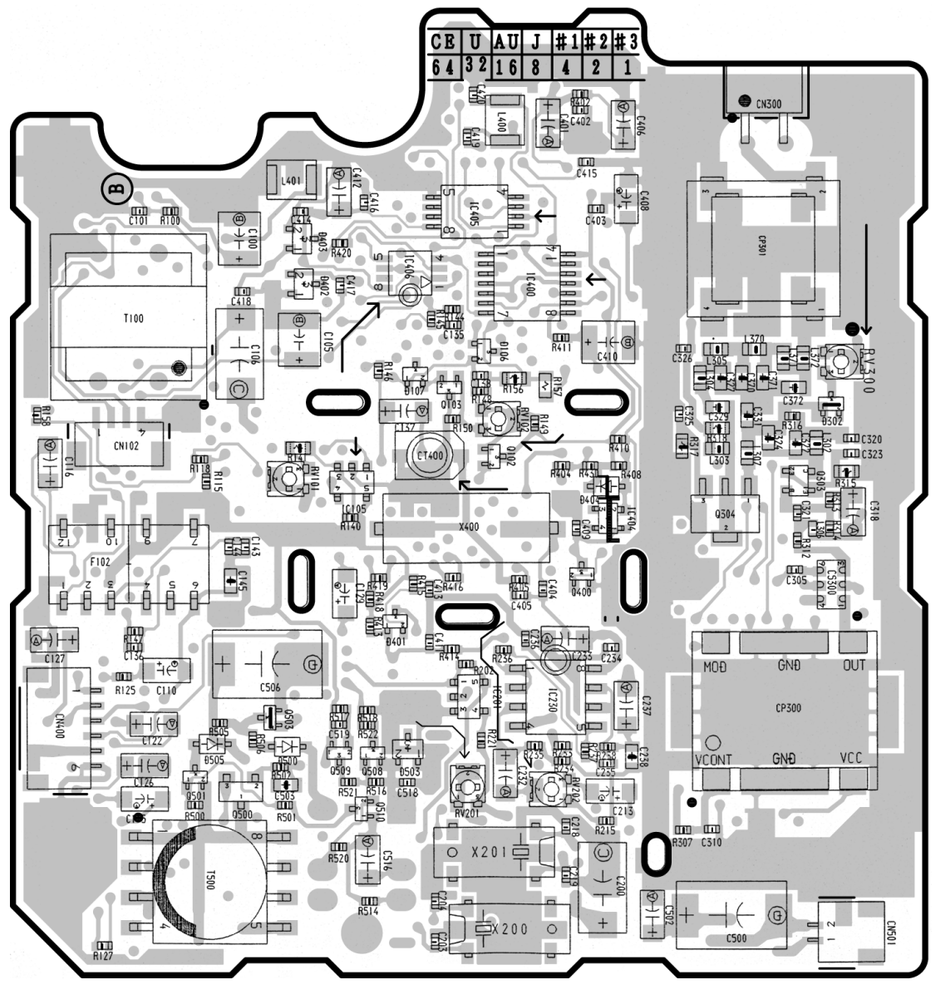

CN100
MIC
INPUT
CONNECTOR
AUDIO
CONNECTOR
(CN102)
TRANS
FORMER
T100
AUDIO
ATTENUATOR
IC100
MIC
AMP.
IC101
(1/2)
LOW PASS
FILTER
F102
BUFFER
AMP.
IC203
(1/2)
COMPRE-
SSOR
IC104
PRE-
EMPHASIS
50µs
C121
R133
AMP. &
Limitter
IC203
(2/2),
Q102, 104
Q103,
D106, 107.
AF
AF SWITCH,
FILTER
IC202,
IC230
VCO
CP300
PRE-AMP.
Q303
POWER
AMP.
Q304
LOW PASS
FILTER
L304, C327
L305, C370
L378, C371
L371, C372
L372
ISOLATOR
CP301
ANTENNA
CN300
TONE
AFM
L.P.F.
C308
R305
A/D
CONVERTER
IC102
D104
D400
X'tal
OSCILLATOR
X201
IC200
(4/6)
(5/6)
Q201
Q230
Q200
D/A
CONVERTER
IC200
(3/6)
PLL
IC300
X'tal
OSCILLATOR
X200
IC200
(1/6)
IC201
IC200
(6/6)
X'tal
OSCILLATOR
X400
IC400
CPU
EEPROM
IC405
IC402
LCD
ND400
RESET
IC404,
Q400
LD
COMPARATOR
Q300
Q508
Q509
IC501
VCC2 3.3V
POWER SWITCH
S500
DC-DC CONVERTER 5V
Q500, Q501, Q502, Q503,
D500, D505, IC500, Q510
VCC1 5V
BATTERY
CN501
LR6x2

MB-940 BOARD

Section 7
Board Layout



MB-940 -A SIDE-
SUFFIX: -11



MB-940 -B SIDE-
SUFFIX: -11

Section 8
Schematic Diagrams

Note:
Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
DC voltage are taken with digital multimeter (input impedance 1MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is -60dB (0dB=1Vrms) and fed with AF oscillator from MIC input terminal.
Voltage variations may be noted due to normal production tolerances.

*1

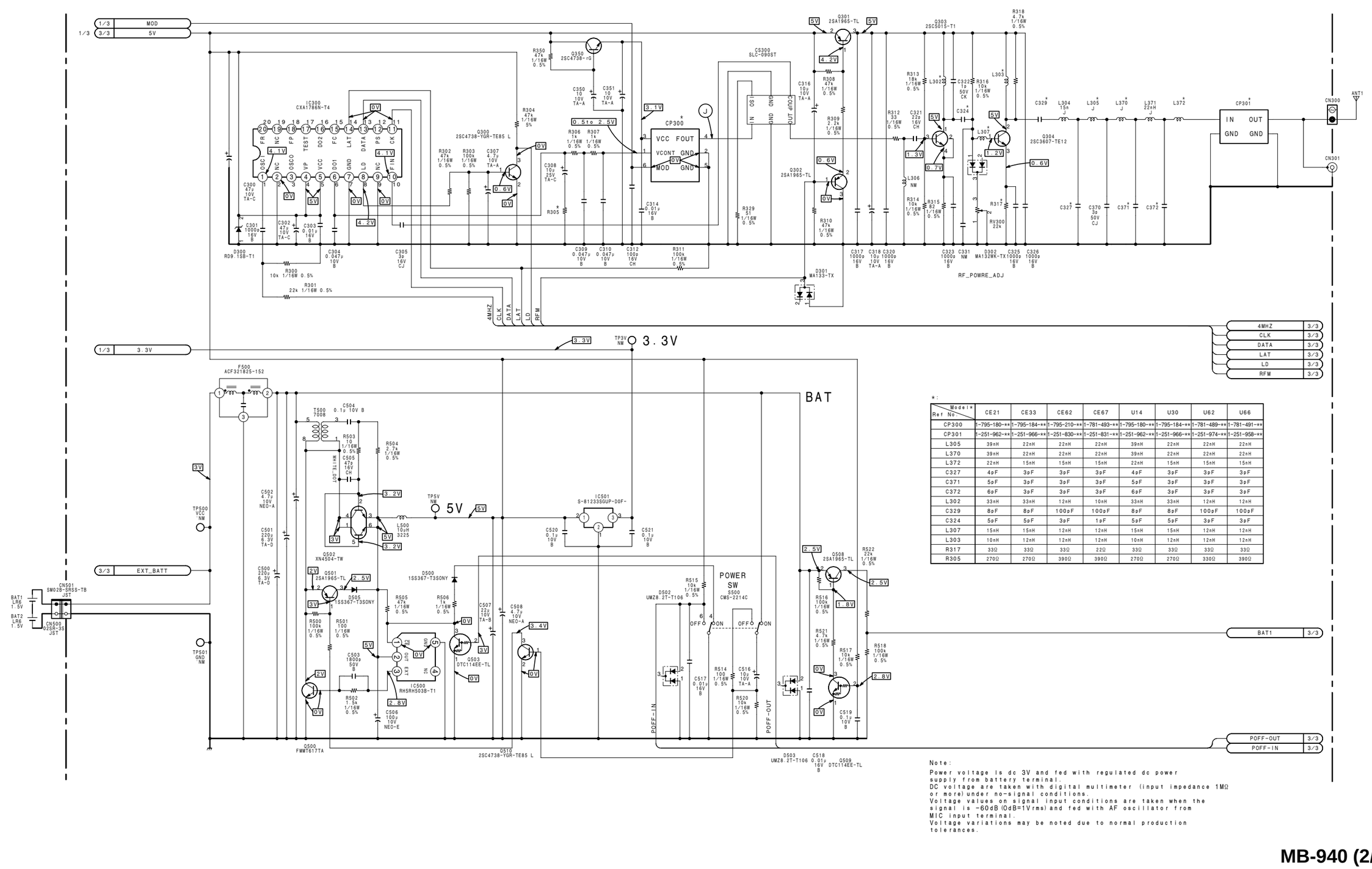
ATT LEVEL	IC100 9pin	10pin	11pin
0	L	L	L
3	L	L	H
6	L	H	L
9	L	H	H
12	H	L	L
15	H	L	H
18	H	H	L
21	H	H	H

*:

Model* / Ref No.	CE21	CE33	CE62	CE67	U14	U30	U62	U66
R156	0Ω	0Ω	0Ω	0Ω	NM	NM	NM	NM
R157	NM	NM	NM	NM	0Ω	0Ω	0Ω	0Ω
C146	10μF/10V	10μF/10V	10μF/10V	10μF/10V	NM	NM	NM	NM
Q102	2SC4919-TL	2SC4919-TL	2SC4919-TL	2SC4919-TL	NM	NM	NM	NM
Q103	2SA1965-TL	2SA1965-TL	2SA1965-TL	2SA1965-TL	NM	NM	NM	NM
R139	100kΩ	100kΩ	100kΩ	100kΩ	47kΩ	47kΩ	47kΩ	47kΩ
R141	4.7kΩ	4.7kΩ	4.7kΩ	4.7kΩ	10kΩ	10kΩ	10kΩ	10kΩ

NM: No mount

MB-940 (2/3)



*:

Model * / Ref No.	CE21	CE33	CE62	CE67	U14	U30	U62	U66
CP300	1-795-180-**	1-795-184-**	1-795-210-**	1-781-493-**	1-795-180-**	1-795-184-**	1-781-489-**	1-781-491-**
CP301	1-251-962-**	1-251-966-**	1-251-830-**	1-251-831-**	1-251-962-**	1-251-966-**	1-251-974-**	1-251-958-**
L305	39nH	22nH	22nH	22nH	39nH	22nH	22nH	22nH
L370	39nH	22nH	22nH	22nH	39nH	22nH	22nH	22nH
L372	22nH	15nH	15nH	15nH	22nH	15nH	15nH	15nH
C327	4pF	3pF	3pF	3pF	4pF	3pF	3pF	3pF
C371	5pF	3pF	3pF	3pF	5pF	3pF	3pF	3pF
C372	6pF	3pF	3pF	3pF	6pF	3pF	3pF	3pF
L302	33nH	33nH	12nH	10nH	33nH	33nH	12nH	12nH
C329	8pF	8pF	100pF	100pF	8pF	8pF	100pF	100pF
C324	5pF	5pF	3pF	1pF	5pF	5pF	3pF	3pF
L307	15nH	15nH	12nH	12nH	15nH	15nH	12nH	12nH
L303	10nH	12nH	12nH	12nH	10nH	12nH	12nH	12nH
R317	33Ω	33Ω	33Ω	22Ω	33Ω	33Ω	33Ω	33Ω
R305	270Ω	270Ω	390Ω	390Ω	270Ω	270Ω	330Ω	390Ω

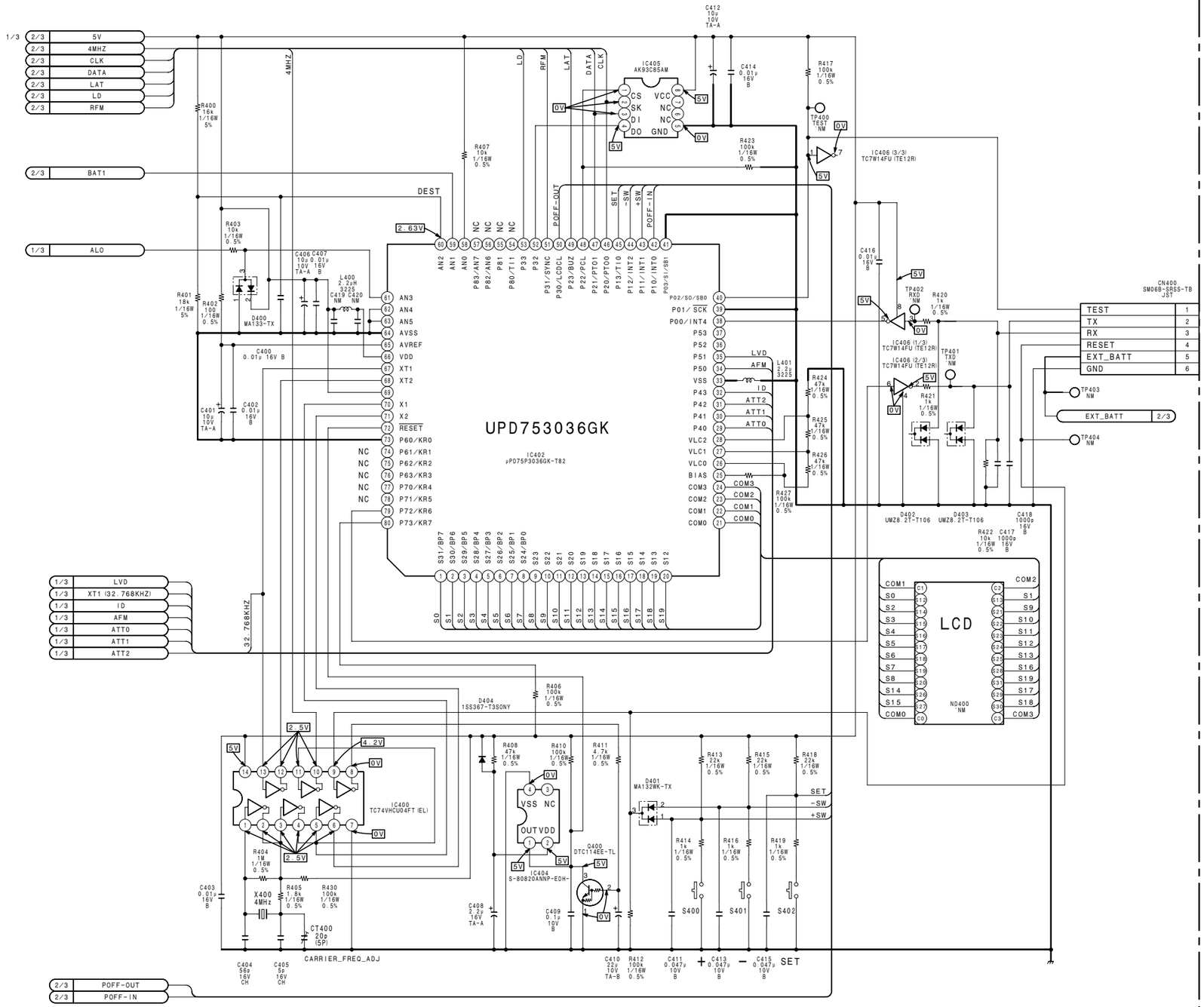
Note:

Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
DC voltage are taken with digital multimeter (input impedance 1MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is -60dB (0dB=1Vrms) and fed with AF oscillator from MIC input terminal.
Voltage variations may be noted due to normal production tolerances.

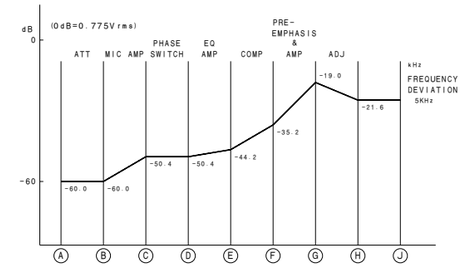
MB-940 (2/3)

8-2

WRT-822B



- Level diagram



Note:
- Power voltage is dc 3.0Vdc and fed with regulated dc power supply from battery terminal.
- Reference input signal is −60dB (0dB=1Vrms) and fed with AF oscillater from MIC connector.
- For measuring points (Ⓐ to Ⓙ), see schematic diagram.
- Level values are referential values measured with AF level meter.

Note:
Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
DC voltage are taken with digital multimeter (input impedance 1MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is −60dB (0dB=1Vrms) and fed with AF oscillator from MIC input terminal.
Voltage variations may be noted due to normal production tolerances.

MB-940 (3/3)

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